University of KwaZulu-Natal

Mapping Internationalization in Research Collaboration in the International Society of Political Psychology

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2017

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I, Brian Mhlongo, declare that

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Brian Mhlongo Date

We, Dr Michael Quayle and Prof Augustine Nwoye, confirm that the work reported in this dissertation was carried out by Brian Mhlongo, under our supervision

_____ 30 October 2016

Dr Michael Quayle Date

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Prof Augustine Nwoye Date

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Abstract

This research explored internationalization in research collaboration in the international society of political psychology (ISPP) by mapping patterns collaboration in conference presentations at the ISPP annual meetings 2006-2014. The pattern of international collaboration was assessed by exploring co-authorship between authors from different countries who have published together. The terms 'WEIRD' (Western, Educated, Industrialized, Rich, and Democratic) and 'non-WEIRD' were adopted from Heinrich et al., (2010) and used differentiate between 'developed or core' countries (WEIRD) and 'developing or periphery' (non-WEIRD) countries. These patterns of international collaboration were analysed using social network analysis and the Statistical Package for the Social Sciences (SPSS). It was found that most ISPP conferences were attended by authors from WEIRD countries, mainly dominated by USA and UK; and fewer authors from non-WEIRD countries like Nigeria, Costa-Rica and Indonesia. As far as international research collaboration is concerned, findings showed that authors from WEIRD countries collaborate with each other, with a limited collaboration between authors from WEIRD and non-WEIRD countries; and no collaboration between authors from different non-WEIRD countries was found. The trend in this research is that the structures of collaboration allow for WEIRD authors to produce their own relevant knowledge within the field of political psychology, whilst restricting the non-WEIRD authors to do likewise. Furthermore, Non-WEIRD authors' collaboration is limited and mediated by WEIRD author's connection in the network. The degree of centrality showed a significant difference between WEIRD and non-WEIRD authors, suggesting that WEIRD authors had more opportunities for collaboration than non-WEIRD authors. However, the non-WEIRD authors are not entirely excluded or left outside in the periphery of this network, but they do interact with the WEIRD authors as indicated by the betweenness and closeness of centrality. In addition, this means that non-WEIRD countries are not completely dependent on WEIRD authors for the production of knowledge in political psychology, instead, they are also contributing to knowledge production by means of collaboration with WEIRD authors. Overall, this study proves that internationalization in research collaboration is not yet fully accomplished within the ISPP due to stringent limitations in the collaborative patterns between WEIRD and non-WEIRD authors. [Words 348]

Keywords: research collaboration, internationalization, social network analysis,

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Chapter 1: Introduction

1.1. Background

Increasing research collaboration is a key aim of many international societies and funders (ISPP, 2015; HFSP, 2015; RCUK, 2015), including for societies such as the International Society for Political Psychology (ISPP). The ISPP's main aim is to gather researchers from different parts of the world so that they can come together and collaborate in research, thus increasing international research collaboration (ISPP, 2015).

Research collaboration is a process whereby two or more authors work together in a research project and/or publish an academic paper together (Liu et al, 2005). When researchers from different Universities, governments, organizations and countries collaborate together, it is called international research collaboration (Antello, 2012). Research Internationalization is a process whereby research collaboration is no longer limited to researchers from the same Universities, governments, organizations and countries only, but it can be extended to different Universities, governments, organizations and countries.

Research collaboration is a fast growing phenomenon in the world, where an increase in international collaboration is possible between states, universities, academic institutions, and researchers. Since technology is constantly improving, the level of communication between researchers has also improved, which also led to the increase of research collaboration between countries (Hoekman et al., 2010). These factors enable research collaboration at a global level and make it easy for researchers to collaborate. Research collaboration is considered a good factor in the academic world because when different authors from different countries collaborate internationalization in research occurs. (Gazni et al, 2012; Sloan & Arrison, 2011). As such, international funders and societies are willing to make positive contributions towards research internationalization because it is considered a good or desired outcome.

Katz and Martins (1997) stated that the word collaboration must be unpacked in order to define research collaboration. On the one hand, the word collaborator is suggested, referring to someone who contributes in research shared with others of the same interest in one project or research paper. On the other hand, research collaboration develops 'collaborative relationships' which allow researchers with similar ideas to share data, take interests in other

individuals ideas, to form an alliance through conversations in conferences and to integrating knowledge or data from different projects into one project. Quayle and Greer (2014) state that "people who collaborate on a publication must have been able to agree on paradigms, research questions, methods, analyses, and conclusions, at least temporarily" (p.498). Thus, research collaboration aids in research internationalization, which is a process whereby authors from different institutions, most importantly, authors from different countries collaborate in research (Antello, 2012). Internationalization in research is a very important form of collaboration since authors from different curriculums, disciplines, and cultures contribute to one paper. This form of research is important because the authors from different parts of the world contributed to knowledge production that would be applicable to different context, not one that is generalised to a different context but not applicable to others.

Research collaboration can be observed in co-authorship (where two or more authors publish a paper/s together) (Liu et al, 2005), although not all collaborations result in publications. Co-authorship is the collaboration that happens between two authors or sub-authors, and these authors have worked together in an academic publication. The ISPP annual conferences comprise of abstracts from co-authored papers, some of these papers that take part in the annual conference of the ISPP are published papers, that are published in the ISPP journal.

Co-authorship is a visible sign of collaboration that can be analysed using social network analysis (SNA). Social network analysis takes into account that individual actors interact with other actors, and explores how interactions between actors form part of a larger social network structures (Liu et al., 2005; Otte & Rouseau, 2002). Newman (2004) argues that "the co-authorship network is as much a network depicting academic society as it is a network depicting structure of our own knowledge" (p. 5200). Co-authorship analysis is usually derived from bibliometrics, which is the "application of quantitative analysis and statistics to publications such as journal articles and their accompanying citation counts" (Thomson Reuters, n.d, no page). This means that journal articles are collected and analysed to see how they are used by researchers or evaluated statistically on how they are used. Bibliometrics is the most practical and effective way to study research collaboration within organizations and institutions (Glanzel & Schubert, 2005 in Quayle & Greer, 2014).

Bibliometric analysis maps out patterns of collaborations between authors in a network (Liu et al., 2005). Co-authorship analysis in this research is useful in identifying authors who have many connections in a network and those authors that have central or peripheral positions in a

community of academic knowledge. It also helps in identifying levels of internationalization in research collaboration within a specific co-authorship network. For example, SNA can be used to map patterns of co-authorship in fields such as political psychology as done by Quayle & Greer (2014) who demonstrated in their study by mapping patterns of collaboration in social psychology from African authors and their position in international social psychology. The present study aims to do something similar by using bibliometric social network analysis to investigate internationalization within the International Society of Political Psychology (ISPP).

This research will be focusing on the concept of internationalization in research collaboration in the ISPP. The ISPP is an international organization that aims at establishing a society of scholars that have similar research interests in political psychology from universities, governments, and in other research institutes around the world (ISPP, 2014). Perry (2011) explains political psychology as an interdisciplinary field that studies issues related to political science and psychology. This includes the study of political behaviour and all aspects of politics, which mainly occurs in social context and it is also related to social psychology.

1.1.1. The International Society of Political Psychology (ISPP)

The ISPP gives researchers a platform to collaborate with other researchers who have common interests in order to produce knowledge that could be applicable to different cultures, countries, and scholars around the world (ISPP, 2014). A key goal of the ISPP is to bring about research internationalization in the field of political psychology, creating links between academics in different countries with similar research interests and facilitating collaboration. The society aims to provide a shared forum for academics in all parts of the world. Thus internationalization is the idea that political psychology can be internationalized with all the countries working hand in hand, particularly in the research field. As such, the ISPP intends to enhance internationalization in research collaboration within their organization.

The ISPP encourage scholars with similar research interests from the same or different geographic areas to collaborate in research (ISPP, 2014). The ISPP also invites young scholars who are interested in political psychology to join the ISPP and also offer small grants for research purposes. The collaborated papers are published in the ISPP journal, and

the abstracts of those papers are discussed in the ISPP annual meeting/conferences. Furthermore, since members of the ISPP are from the different geographic areas across the world, through their research collaboration, internationalization in research collaboration could be achieved.

1.1.2. Academic internationalization

Henrich et al. (2010) revealed that most research produced in psychology comes from countries that are Western, Educated, Industrialised, Rich and Democratic (WEIRD). If knowledge in psychology is mainly produced by WEIRD countries, then it is likely that other countries derive their psychology knowledge from the Western perspective. Of note, Henrich et al., (2010) argued that WEIRD countries perceive their view as universally acceptable. This perspective does not encourage internationalization in research, thus suggesting that it is difficult to reach internationalization in research. It also undermines other forms of knowledge in psychology that is not produced by WEIRD authors/countries. However, internationalization is not always unproblematic: many studies have indicated that collaboration networks are centred in wealth developed countries which give them an advantage in research collaboration (Leydesdorff & Wagner, 2008; Schubert & Sooyramoorthy, 2010; Gazni et al, 2012; Hwang, 2008). In such networks structures, the countries that are not well funded gain significantly if they collaborate with more developed countries, especially the United States of America (USA) and other countries from Europe (Otte & Rousseau, 2000; Goldfinch, Dale, & DeRouen, 2003; Onyancha & Maluleka, 2011, in Gazni et al, 2012; Hwang, 2008). Nonetheless, such collaborations can produce substantial power imbalances that can impact on the benefits of internationalization in research (Gazni et al., 2012).

1.2. Problem statement

As stated in its constitution, internationalization is a core goal of the ISPP, as it aims to bring together social science researchers, with a common research interest in political science and political psychology from governments, universities and research institutions (ISPP, 2014). However, the extent to which internationalization has been achieved or how international

relations are structured within the organization is not clearly stipulated. The ISPP, therefore, claims to have reached internationalization in research collaboration, which suggests that authors from different countries have been collaborating in research and publishing together. However, did the ISPP really reached the full extent of research collaboration and all the required aspects towards research internationalization. To assess whether the ISPP has reached internationalization in research the following questions will guide the research:

1. To assess the extent of internationalization in research collaboration within the ISSP.
2. To identify social networks of research collaboration between countries in general.
3. To identify patterns of collaboration between core/WEIRD countries and periphery/non-WEIRD countries
4. To exploring how research collaboration has changed over time; that is, to check whether internationalization is increasing or decreasing over the years.

Chapter 2: Literature Review

2. Research collaboration and internationalization in research

The main aim of this study was to investigate internationalization of research collaboration in the International Society of Political Psychology (ISPP). The ISPP stated in their constitution that they aim to enhance and promote internationalization in research collaboration (ISPP, 2014). The society publishes a journal, *Political Psychology*, to disseminate the work of their members and the academic community in political psychology. According to Perry (2011), political psychology is an interdisciplinary field that studies issues related to political science and psychology. This includes the study of political behaviour, which mainly occurs in social context, and thus related to social psychology.

The ISPP also hosts annual conferences attended by members and non-members of the ISPP from different countries all over the world. This provides a rich source of data for this study since the conference programmes contain abstracts of papers presented at these annual conferences. These abstracts contain details of authors and co-authors from all over the world. These details allow for the analysis of the representation of countries in the society's activities and the extent of inter-country collaboration, which is an important indicator of internationalization in research collaboration. The following sections will discuss research collaboration and internationalization in a research collaboration to develop the aims and objectives of the study.

2.1. Research collaboration

Katz and Martins (1997) stated that research collaboration is when individual researchers agree to enter into a partnership that is mutual in terms of sharing of ideas and information on what kind of research experiments are relevant, what kind of hypothesis can be tested, and which theoretical perspectives could be taken. They argue that a collaborator is someone who gave input to a certain project that is, contributed to the final research output.

Researcher collaboration is a social process. These relationships may be between partners with existing structural relations, such as between supervisors and students, or members of the same research group (Katz and Martins, 1997; White, 1999, in Sheren et al., 2009). However, when academics and researchers interact with each other they may form

collaborations based on their similar interest or interest in each other's ideas. Furthermore, many research collaboration partnerships have started, because individuals had shared the same ideas or research interests or data, and taking interests in another individual's ideas and proposing to form an alliance or through conversations in conferences and integrating knowledge or data from different projects into one project (Katz & Martins, 1997).

Research collaboration happens in many forms and for different reasons between researchers. For example, contact between individual researchers can promote the formation of relationships, where people can integrate their knowledge in a form of collaboration (Katz & Martins, 1997). Research collaboration promotes innovative knowledge production by combining different perspectives; it increases the sharing of information and the integration of ideas to meet research goals (Carayannis et al., 2000; Hagedoorn, 1993; Parker, 2000; Tidd et al., 1997, in Numprasertchai & Igel, 2005). For these reasons, research collaboration is usually promoted by institutions such as government organizations, industries and universities (Sooyramoorthy, 2013). However, the main key actors in these initiated collaborations are the researchers, since they are the ones who decide the partnership based on their research interests and goals.

In research collaboration, researchers must have common goals about the research and reach an agreement on core activities. These include, but are not limited to: identifying the research problem, defining concepts so that the research must be understood better by all the partners in that project, agreement on the methodology of the research project and dissemination of the research project (White, 1999, in Sheren et al., 2009).

Communication in collaborative relationships is facilitated by advanced communications technology (Hoekman et al., 2010) and an increasing ease of travel across the countries or the world. Therefore, geographical location no longer hinders research collaboration as much as it once did before technology advancement has made it simpler for individuals to be in contact with each other while they are in different geographical areas.

Internationalization in research collaboration is basically research collaboration that is not within state borders (Hwang, 2008). According to Hwang (2008), meaningful research collaboration is a collaboration that occurs internationally between one or more states. Hwang (2008) argues that every state government in the world, their universities, their organizations are engaging in international scientific collaboration and technology; this is mainly because of the new world order of knowledge orientated economies, and for these

countries to survive in such an environment they need to participate in international research collaboration. This is mainly due to the scientific discoveries made by research that help in the development of countries.

2.1.1. Cooperative relationships in research collaboration

In figure 1, below, Costello and Zumla (2000) argued that for international research collaboration to be fully collaborative there should be "(a) mutual trust and shared decision-making, (b) national ownership, (c) emphasis on getting research findings into policy and practice and (d) development of national research capacity" (p. 827). These are elaborated in the list of guiding questions (figure 1) for a truly cooperative collaborative research partnership between researchers (ibid.).

Mutual trust and shared decision

making

- Do the partners know each other well and do they trust one another?
- Do the partners have regular and easy communications?
- Do the partners have good access to databases and information from international organizations?
- Who proposed the research programme?
- Do all participants understand it?
- Did people who will be affected by the research participate in developing the research theme?
- Were users consulted?
- Are the likely beneficiaries of the research clearly defined?

National ownership

- Do national partners have overall administrative responsibility and responsibility for scientific supervision?
- If not, why not?
- Is there transparency, with equal access of partners' to scientific and budgetary documents and fund allocation decisions?
- Do the national partners have adequate training and audit systems to take full responsibility for program implementation?
- Are there clear and fair rules about who has authority over financial decisions?
- Will the partners share equally in any findings or potential commercial value, and has an agreement been made?

Early planning for the translation of research findings into policy and practice

- Does the research give due consideration to the social, political, economic, and technical situation of the partners?
- Is traditional knowledge and custom incorporated into the research plan
- Is there a dissemination plan?
- Does this include publications or reports for the people directly affected by the research and by a wider audience than the scientific community?
- What is the plan about targeting governmental and nongovernmental policymaker, stakeholders, and opinion leaders?
- Is authorship of scientific publications balanced?
- What steps are being taken to ensure that research findings will quickly be put into practice?

Development of national research capacity

- Does the research fit into national or regional research policy?
- Is the collaboration being monitored and evaluated both internally and externally?
- Are national partners properly represented in evaluations?
- How will the partnership develop local research capacity in the field of interest?
- Who will receive training, where, and for how long?
- How will South-to-South collaboration be promoted?
- What will happen to staff when existing research projects finish?
- Will the research partnership reduce the migration of researchers to the developed world or into the bureaucracies of international agencies?
- How will the partner institution sustain research and continue research after the program has finished?

Note. Adapted from "Moving to Research Partnerships in Developing Countries," by A. Costello, and A. Zumla, 2000, *British Medical Journal, 321,* 829.

Figure 1: Costello and Zumla's (2000) "checklist to evaluate the principles of research partnership in developing countries"

Research collaboration can happen at many levels, such as "cross-disciplinary, cross-institutional, cross-geographical, and international" levels (Hwang, 2008, p. 101). Cross-disciplinary research collaboration is research that involves more than one discipline. Cross-institutional research collaboration is research collaboration that occurs between two or more institutions. Cross-geographical research collaboration occurs between two or more originations that are not located at the same place. International research collaboration occurs when research from different countries or states in the world cross borders and form partnership with researchers from other parts of the world. Of course, collaboration could

occur at many of these levels simultaneously or concurrently, and other various combinations. The following section will discuss knowledge production in research collaboration.

2.1.2. Knowledge production in research collaboration

Tijssen (2007) stated that developing and underdeveloped countries are rarely part of the international research community. This means that these countries have reduced input into new research knowledge that will be able to enhance and sustain the development of their countries (ibid.). According to Tijssen (2007) when countries cannot sustain themselves due to lack of research knowledge, such countries will have poor health care, increased levels of poverty. In addition, Gibbons et al., (1997) state that knowledge production in the modern age has really evolved from a single or individual researcher conducting his/her own research to a team of researchers in which they work on one research project (in Miguel et al., 2012).Scientific research that is conducted from these developing countries is often viewed as science of the periphery, this is not because the kind of research conducted in these countries is viewed as not important or is of less value and irrelevant to societal needs of the developing or WEIRD countries, but it is due to the fact that these countries lack visibility and do not have a position in the international research community (Tijssen, 2007).

Arunachalam (2004) stated that some of the reasons that research from developing or under-developed countries are not recognized internationally is because their research is published and disseminated locally, and therefore does not get exposed to the international research community; thus the knowledge from such research is only known locally (in Tijssen et al., 2006). Moreover, another important reason that research from developing or non-WEIRD countries is not internationally recognized is that the journals publishing work from these countries are often not represented in the databases of international journals (Arvanitiset al, 2000; ASSAF, 2006 in Tijssen et al., 2006).

There are several reasons that these databases do not focus on developing countries' research. *First*, most of the international peer-review journals focus on main stream English-language science, which is mostly developed countries (Tijssen et al., 2006). *Second*, according to Pouris and Richter (2000), research published from developing countries sometimes does not meet international standards to be published internationally (in Tijssen, 2007). *Third*, mainstream journals usually have editors and editorial boards from core countries that act as

gatekeepers for the ideas; often favouring those congruent with the prevailing orthodoxy to be published. Since the prevailing orthodoxy is established by researchers publishing in those journals, this causes ideas from the periphery to be under-represented and undervalued (Tijssen, 2007). Sonnenwald (2007) stated that the way in which research collaboration in science has recently increased indicates a sign of growth and efficiency in institutions that are responsible for knowledge production, which suggest that actors from different institutions can work together (in Miguel et al., 2012). The following section will discuss internationalization as it relates to globalization in detail.

2.1.3. Internationalization and globalization in research collaboration

The world is interconnected in such a way that there are fewer practical boundaries between countries which can prevent research collaboration (Boshoff, 2010; Ponds, 2009). Information or scientific knowledge is shared amongst individuals and scholars in different countries, which creates research collaboration between individuals from different countries (ibid.). Knight (2002) defined internationalization as an essential process that connects the world at an international level, it is also a process that brings together researchers from different cultural backgrounds and cross culture research is important in academia.

The term internationalization cannot be defined in the absence of globalization; the two are linked together and related (Scott, 2000 in Huang, 2007). Globalization is defined as a world that is interconnected in all aspects of social life, including in politics, culture, and economics. Driving globalization are advances in information, communication, infrastructure, and transportation, which are all enhanced by updated and new technological resources (Held et al., 1999; Huang, 2007). The definition of globalization suggests that the world has evolved into a shared space where there are fewer national boundaries preventing interactions with other nations.

Henrich et al., (2010) indicated that most research produced in psychology originates from the group of countries that are Western, Educated, Industrialised, Rich and democratic (WEIRD). The WEIRD countries are usually countries that geographically occupy the west, and Western Europe in the world; these countries are often referred as Western countries/developed countries. According to Henrich et al., (2010) the classification of countries as WEIRD suggests an existence of a set of various countries that can be considered as non-WEIRD/developing and underdeveloped countries; these are countries that contribute

less in research, unlike their WEIRD counterparts. In addition, Henrich et al., (2010) argued that the WEIRD countries such as the USA have access to resources to conduct more research; therefore it is not a surprise that many publications across various disciplines contain more research from WEIRD countries compared to non-WEIRD countries.

In research, internationalization refers to countries collaborating with each other in research with the aim of improving each other through science and technology (Ponds, 2009). Van Den Besselaar et al., (2012) argued that internationalization in research is a phenomenon that is hard to study in research institutions since measures of internationalization are still poorly developed and there are no clear empirical indicators to determine or compare levels of internationalization. However, internationalization in research can be measured by three things: (1) the number of authors from different countries taking part in a research, (2), the representation of both developed and developing authors in a research and (3), the extent of research collaboration between developed/WEIRD and developing/non-WEIRD authors having equal status within the representation (Quayle & Greer, 2014).

The second and third components are important as it moves beyond the assumption that internationalization in research simply involves researchers from different countries interacting with each other, which occurs frequently with a relatively little cultural exchange. For example, when British researchers from Northern Ireland collaborate with researchers from the Republic of Ireland it would be classed as international collaboration, but one with relatively few (cultural) differences between collaborators. These definitions of internationalization, therefore, distinguish broadly between countries relatively prominent in international research (WEIRD) and those that are substantially different on multiple dimensions (non-WEIRD) to consider research internationalization that includes both developing, under developed countries in all geo-political regions. Internationalization between collaborators from two WEIRD countries is both more common and less mould-breaking than between WEIRD and non-WEIRD countries (Henrich et al., 2010) or two different non-WEIRD countries. The section below will discuss internationalization between WEIRD and non-WEIRD countries, which will determine internationalization in research collaboration.

2.1.3.1. The Dependency theory and internationalization

"[Dependency is]...an historical condition which shapes a certain structure of the world economy such that it favours some countries to the detriment of others and limits the development possibilities of the subordinate economics...a situation in which the economy of a certain group of countries is conditioned by the development and expansion of another economy, to which their own is subjected" (as cited in Farraro, 2008, para. 8).

The above model of the dependency theory was used by Theotonio Dos Santos to elaborate the reasons why the under-developed stay in a static position of being under-developed countries. While developed countries continue to develop at the expense of the under-developed countries (in Farraro, 2008).

The dependency theory is based on Wallerstein's world-system theory, which states that the world has centre/WEIRD and periphery/non-WEIRD which are connected by economic exchange process (Schubert & Sooyramoorthy, 2010). The dependency theory reflects the idea that there are unequal distributions of resources from the periphery (under-developing) to the centre (developed) countries. This means that the centre (developed) countries are likely to benefit at the expense of the periphery (under-developing) countries' resources, whilst these under-developed countries receive little benefits or nothing in return.

The dependency theory is useful in explaining internationalization in research because periphery countries do not have the same opportunities at their disposal that pertain to funding reputation and a number of contacts with other researchers. This does not encourage internationalization in research since the countries that are in the centre rarely collaborate with countries at the periphery. In addition, the centre-periphery model discourages research internationalization in the sense that collaboration is usually done by researchers from the centre countries other than being done on the basis of researchers' ability and capabilities, which was going to allow collaboration from both developed and developing countries. The centre-periphery model, however, explains some of the factors why there is a difficulty in reaching internationalization in research.

The model of the dependency theory is applicable in this research because the ISPP comprise of researchers from the core and periphery countries. In the ISPP is the dependency theory could be in play because researchers that represented are from the core and the periphery. The

researchers from the core might be collaborating with each other due to reasons stated above, however, there is also the possibility that core and periphery countries are collaborating with each other at a minimal level. Therefore it is important in this research that the dependency theory is carefully analysed when mapping the pattern of research collaboration in this research.

2.1.4. The growth of internationalization in research collaboration

There are many factors that contribute to international research collaboration growth. The section below will discuss some of the factors that aid the growth of international research collaboration between WEIRD and non-WEIRD countries.

Table 1: Tabulation of factors contributing to international research collaboration.
Factors offered in literature to explain the growth in international collaboration in science.

Factors	Internal to science	External to science
Relating to the diffusion of scientific capacity	Centre–periphery theory: lagging countries seeking to cooperate to leading ones (Schott, 1998; Shils, 1988; Ben-David, 1971)	Rising investments by nations and donors in S & T capacity (Wagner et al., 2001)
Relating to the interconnectedness of scientists	Internal disciplinary differentiation of science (Stichweh, 1996)	Historical relationships relating to geographic proximity or colonial ties (Zitt et al., 2000)
	Field-specific characteristics of mega science (Galison and Hevly, 1992)	Increase in international trade (Ben-David, 1971)
	Professionalization of scientific institutes (Beaver and Rosen1978)	Growth of information and communications technologies (Gibbons et al., 1994; Starr, 1995)

Note: adapted from Network structure, self-organization, and the growth of international collaboration in science. By Wagner, C. S., & Leydesdorff, L. (2005), *Research Policy 34 1608–1618.*

In table 1 above Wagner and Leydesdorff (2005) outline some factors that contribute to the increase in research collaboration. There are factors that increase international collaboration that are related to science and factors not related to science, see table 1 (Wagner & Leydesdorff, 2005).

Factors related to science, or are internal to science include, for example, the countries that are at the periphery,who usually want to collaborate with researchers from core countries (Ben-David, 1971 in Wagner & Leydesdorff, 2005; Schott, 1998; Shils, 1988).

Stichweh (1996, in Wagner & Leydesdorff, 2005) stated that researchers usually collaborate with each other because in the world of academia there are different disciplines that are related to each other, allowing different researchers to contribute different perspectives into the research. Also, the issue of professionalism and expertise in science increases research collaboration because researchers will want to collaborate with different people who are considered experts in specific fields since collaborating with such professionals increases the value of the research paper (Beaver & Rosen, 1978 in Wagner & Leydesdorff, 2005).

Other factors that are not related to science, or are external to science include, for example: Wagner et al., (2001 in Wagner & Leydesdorff, 2005) argues that international collaboration has increased amongst researchers from different countries through investments and donations by countries towards one another, which in turn establish relationships between these countries that will eventually lead to international collaborative relationships. In other words, international collaboration is partly driven by funding agencies that value it and make it a factor in awarding grants.

Zitt et al., (2000) include geographical proximity, although, through colonization, the world has remained interconnected in historical patterns that facilitate links between researchers in certain blocks, which increases particular patterns of international research collaboration (in Wagner & Leydesdorff, 2005). For example, some previously colonized countries still have links (or ties) with their colonizers, and these links include free trade between these countries (Ben-David, 1971 in Wagner & Leydesdorff, 2005). Furthermore, the increase in international trade has increased research collaboration, since countries are interacting with each other and it creates research collaborative relationships (Ben-David, 1971 in Wagner & Leydesdorff, 2005). The world has experienced an exponential increase in ways of communication through technology, as such, people are now easily interacting with each other, and it increases communication between researchers from different countries, which

eventually promotes international research collaboration (Gibbons et al., 1994; Starr, 1995 in Wagner & Leydesdorff, 2005).

2.1.5. WEIRD countries in research collaboration

Scientific publications emanating from the core countries, which include countries such as North America and European countries/WEIRD countries, are generally considered to be more advanced and/or significant (Traweek, 1988 in Hwang, 2008). According to Hwang (2008) countries that are at the core are more likely to collaborate with each other in scientific research because the research that they usually produce is deemed to be reputable and of value. Countries from the core are producers of knowledge who independently give research output, and they are usually amenable to collaboration with other similar (i.e. WEIRD) countries as a means expanding current knowledge within the WEIRD countries (ibid.).

According to Henrich et al. (2010), the WEIRD countries have the highest research output. There are many reasons why WEIRD countries have the highest research output compared to non-WEIRD countries (ibid.). The WEIRD countries possess resources and equipment which enables them to produce more research data (Henrich, 2010; van Helden, 2012). Taking into account hefty research costs, WEIRD countries usually prefer to collaborate with other similar countries with sufficient monetary funds and resources in order to cut the costs (ibid.).

2.1.5.1. Non-WEIRD countries in research collaboration

Kim (2006) stated that much of the world research inputs are the results of industrialized countries collaborating with each other and little input known about the developing/non-WEIRD countries contributing to research, and collaboration thereof (in Schubert & Sooryamoorthy, 2010). Hwang (2008) stated that there is an unequal relationship that is taking place with regards to international research collaboration. Usually, the countries at the periphery/non-WEIRD are not well represented in international research collaboration because most research collaboration is within core/WEIRD countries, and such collaboration in subjectively viewed as international collaboration.

Hwang (2008) argued that there is inequality in research collaboration which happens due to the core-periphery model; this model has many factors, which limit research collaboration. These factors are sometimes political, social and economic factors, however, countries at the

periphery are viewed as countries that are not capable of producing reputable research. This then limits research collaboration between the core and periphery countries. According to Hwang (2008), the countries at the periphery are dependent on the knowledge that is produced by countries at the core, whilst the core countries are independent and they do not rely on knowledge produced by the periphery countries. This idea suggests that non-WEIRD countries have less collaboration when compared to WEIRD countries. According to Quayle and Greer (2014), research collaboration in non-WEIRD geo-political regions such as Africa is very limited, especially between these non-WEIRD countries, and any collaboration within the periphery countries is usually mediated by WEIRD countries.

2.1.5.2. WEIRD and non-WEIRD countries in research collaboration

Martin-Rovet (1995) stated that there is a network pattern in international research collaboration, whereby researchers from the periphery try to establish a connection with the core in many collaborative ways like staying in core countries for education and training (in Hwang, 2008). Recently there has been an increase in core-periphery research collaboration and co-authorship (Leydesdorff & Wagner, 2008). However, Costello and Zumla (2000) have stated that researchers from developed countries still use what they call "postal research". This is a process where developed/WEIRD countries researchers collaborate with researchers from developing/non-WEIRD countries in order to gain access to data from these developing countries. In such situations, the researchers from developing/WEIRD countries are usually the ones who collect the data in the in the collaborative relationship. In these collaborations, the researchers in the better-resourced countries are generally the ones who design the studies and claim first-authorship. This form of collaboration is fairly common, even though the postal research collaboration between WEIRD and non-WEIRD countries is not ideal.

Similarly, researchers in developed/WEIRD countries may practice what is called "parachute research"; this is a process whereby these researchers visit developing countries with clear motives of collecting data together with researchers from developing/non-WEIRD countries since the collaboration is somewhat one-sided, this kind of research is published with less input of the developing/non-WEIRD countries, because these countries' researchers contribute less to the design, analysis, and write-up compared to the developed/WEIRD country researchers.

"Postal" and "parachute" are different because researchers from "postal" usually do not participate a lot in the research, but researchers from the country they visited do most of the work, whereas, parachute research the researchers are part of the research and participate in the reseach,

2.1.6. Benefits of research collaboration to society

Sustainable development is the kind of development that happens without compromising or producing any form of distress in the ecosystem so as to preserve development for t the future generations to enjoy the benefits from such developments (World Commission on Environment and Development, 1987, in Sharren et al., 2009). Government owned universities and non-governmental organizations have noticed that a sustainable development can only be achieved with research, thus, collaborative research from multidisciplinary researchers is encouraged because collaboration should proceed to achieve sustainable gains in research across WEIRD and non-WEIRD nations (Sharren et al., 2009). Furthermore, Dovers (2005a, p. 9) stated that sustainable research covers a lot of areas of concern to society, such as "resource depletion and degradation, pollution and wastes, fundamental ecological life support services, and society and the human condition" (in Sharren et al., 2009, p. 4).

Hwang (2008) argues that "governments of every nation, along with universities and companies all over the world, actively engage in the development of science and technology to survive in the new environment of a knowledge-based economy" (p. 102). Von Hippel (1998) explains that innovation usually comes from networks and alliances, therefore policy makers' research collaboration is significant (in Numprasertchai & Igel, 2005). Bammer (2008) argues that collaborative research which addresses major social, environmental and industrial issues is supported and encouraged by government policy makers and business leaders and such research collaboration is viewed as significant. Furthermore, organizations usually enter into long-term contracts to work with one another, as a strategy to increase collaboration (Hoekman et al., 2010).

Governments have been encouraging the increase of international research collaboration because such collaborations have been viewed to increase productivity and lower costs for nations (Abramo et al., 2009; Katz & Martins, 1997). Many government organizations are willing to support international research collaboration to individuals with research interests

that will be beneficial and of good cost to states (Katz & Martins, 1997). Moreover, governments are initiating programs that will increase international scientific research collaboration by giving researchers opportunities to travel and have inter-governmental scientific programs that enhance scientists to get to know each other (Hoekman et al., 2010; Luukkonen et al., 1992). In accordance to Adams et al. (2005) governments have enforced policies that encourage research collaboration in both local and international institutions since research collaborations are a source of information and increase research efficacy (in Abramo et al., 2009).

Organizations such as the European Union have policies that support the formation or collaborative relationships and network structures that aid research collaboration because such collaborative relationships are essential for knowledge exchange and development (ibid.). Furthermore, studies have shown that research collaboration has benefited nations in many areas of life, especially nations that prioritize and focus on research collaboration (Landry et al. 1996; Lee & Bozeman 2005 in Abramo et al., 2009).

Katz and Martins (1997, p.11) contends that "there have also been policies aimed at improving the links between science and technology through fostering research collaboration across sectors, in particular between university and industry". In addition, Mouton et al. (2009) state that the knowledge flow in research collaboration is dominantly influenced by policies that apply to states that interacts with both developed and developing countries. However, challenges in this regard are still prominent even though international research collaboration is increasing.

2.2. Barriers to internationalization in research collaboration

There are many issues that hinder international collaboration between states, with the most difficulties encountered between WEIRD and non-WEIRD countries. WEIRD and non-WEIRD countries have so many differences in language, culture and research priorities, which play a major role in international research collaboration. The following section will give a detailed outline of issues that are barriers to international research collaboration.

2.2.1. Dependency theory: core and periphery

As discussed above, the centre-periphery model plays an important role in how resources are distributed between developed and under-developed countries. According to Schubert and Sooyramoorthy (2010), there is an unfair distribution of resources between countries in the periphery and countries at the core. The countries at the core have resources and they determine how the countries at the periphery should conduct their affairs (Ibid.). The dependency theory is applicable in research collaboration between authors from the core and those from the periphery, and it also serves as a barrier to research collaboration and internationalization in research collaboration.

Many studies have indicated that collaboration networks are driven from the core countries, t because core countries have resources and collaborate to produce research of higher standard, thus collaborative networks will tend to favour them. (Hwang, 2008, Leydesdorff & Wagner, 2008; Schubert & Sooyramoorthy, 2010, in Gazni et al, 2012). However, such network structures allows the developing and underdeveloped countries to significantly gain or benefit, if they collaborate with countries from the core, especially the USA (Goldfinch, Dale, & DeRouen, 2003; Hwang, 2008, Onyancha & Maluleka, 2011, in Gazni et al, 2012; Rousseau, 2000). Therefore, according to the core-periphery model, countries at the core (WEIRD) will collaborate with countries at the periphery (non-WEIRD) to achieve outcomes that will be beneficial to both. In such collaborations, the periphery countries usually benefit from the core countries' resources and economic strength, whilst they also get to reach their research goals (Acosta et al., 2010). For example, using interviews, Hwang (2008) concluded that "the main aim for Korean scientists and engineers in international collaboration was to obtain advanced knowledge and technologies from core scientist's in exchange for funding core knowledge production" (in Acosta et al., 2010, p. 64). Many studies have shown that research collaboration networks favour the core countries, this is mainly because the core (WEIRD) nations are the producers of knowledge and collaborating with other core countries increases their status in the academic world (Leydesdorff & Wagner, 2008; Schubert & Sooyramoorthy, 2010 in Gazni et al, 2012). However, the patterns of dependency that exist between the core/WEIRD and periphery/non-WEIRD eventually leads to the marginalization of countries in the periphery (Schubert & Sooyramoorthy, 2010).

2.2.1.1. Marginalization in research collaboration

The dependency theory argues that collaboration and marginalization are related because research collaboration between the core and periphery countries usually stems from a departure of uneven relations and eventually results in a dependant relationships among these various (i.e. the core and periphery) countries (Schubert & Sooyramoorthy, 2010). Kahveci et al,. (2008) specifically contends that the likelihood of marginalization is guaranteed, considering that core countries use periphery countries to gain knowledge to advance science and technology in their nations, thus leaving the periphery countries to have little gains or nothing in return (in Schubert & Sooyramoorthy, 2010). This marginalization in research collaboration of the periphery countries suggests that these countries are not included most of the time and often not recognized as far as research input and knowledge production is concerned (Schubert & Sooyramoorthy, 2010). This is partly because core/WEIRD countries prefer quality research collaboration and the periphery/non-WEIRD research quality is often perceived as poor or inadequate (Schubert & Sooyramoorthy, 2010; Tijssen, 2007). There is more to this perception than meet the eye when considering that the difference in the quality of research is mediated by proper facilities, equipment, and infrastructure, which are underdeveloped or lacking in the marginalized periphery countries (Numprasertchai & Igel, 2005). The periphery countries are also marginalized in the sense that these countries do not receive funding to enable them to conduct as much research, or research of comparable ambition (Schubert & Sooyramoorthy, 2010).

2.2.2. Funding and resources

Financial support for research in non-WEIRD and developing countries is very scarce and constrained (van Helden, 2012). On the one hand, the lack of resources in such countries makes it difficult for these countries to conduct independent research which will contribute to development in their country (ibid.). As a result, non-WEIRD countries remain under-developed and poor, since they are unable to do research that will be beneficial to their country (ibid.). On the other hand, van Helden (2012) states that developing countries with a low income per capita are usually prone to manipulation and unfair involvement in research collaborations with the developed and established core countries, who usually promise to offer financial assistance under strict and stringent regulations which are often difficult for the periphery countries to meet or benefit from. For instance, such regulations usually place

the developed/WEIRD country to control how the funding should be spent and how the research should be conducted.

These regulations that are attached to the financial assistance from the developed/WEIRD to developing/non-WEIRD countries can make things difficult for researchers from developing countries. As a result, non-WEIRD researchers may be reluctant to join forces with researchers from developed/WEIRD countries due to unequal terms of control in the research partnership (ibid.). However, this is not always the case collaboration between WEIRD and non-WEIRD countries do sometime occur despite difficult or biased regulations and stipulations attached to the partnership in favour of the WEIRD countries. This is the case because, for some periphery countries (or researchers), the opportunity to receive funds outweighs the little things of how the research is conducted and run.

Research collaboration that often occurs between WEIRD and non-WEIRD countries in natural science research, is usually limited or virtually non-existent because it involves expensive research equipment and laboratories that are lacking in the non-WEIRD countries. This equipment is expensive; therefore researchers from WEIRD countries consider such collaborative partnership "pricy". However, partnerships with non-WEIRD countries are more likely to be considered by WEIRD countries or they thrive when the research has low financial costs.

Mouton et al., (2009) stated that "much of the current scientific inquiry at many institutions in developing countries are underfunded, which is often driven by the individual scientist's priorities and interests, and it is ultimately aimed at advancing the academic career of the individual" (p.15). Furthermore, researchers from developing countries have a desire to be independent in their research activities and when these researchers collaborate with other researchers from developing countries, their independence may be undermined by unequal relationships with researchers from developing countries; as a result, researchers from developing countries may limit research collaboration with researchers from developed countries. In addition, the mechanisms for the distribution of funds in collaborative projects may create further power imbalances between researchers (Mouton et al., 2009). Funds are usually allocated to individual researchers (usually the Principal Investigator) rather than across a team of researchers, which would maximize research collaboration. This practice of allocating collaborative research funds to individual researchers may hinder research collaboration because other researchers want to be independent. As such, when research

project funds are controlled by an individual, independence for other research members is reduced and then creates a problem.

2.2.3. Different Perspectives

Research collaboration involves human beings interacting with one another for the duration of the specific research project. Taking into account the diversity of people, researchers usually bring into the collaboration unique theoretical perspectives and way of thinking, which have both negative and positive implications (Sooyramoorthy, 2013). For a positive result, the researchers produce a synergistic relationship by working together. However, the research project is usually comprised if the researchers have difficulty in setting aside their differences to effectively work together. Of note, research difficulties often occur when the researchers involved in the collaboration are from different disciplines (Sooyramoorthy, 2013). Furthermore, Sloan and Arrison (2011) argues that culture is a challenge in research collaboration because people interpret others' cultural backgrounds based on their own cultural background. As such, cultural differences among researchers can comprise the possibility of research collaboration, especially from researchers who are of a different cultural descent.

2.2.4. Policies

Poor fit between domestic and international policies can create situations whereby it is difficult for states to form partnerships in research (Mouton, et al., 2009). These difficulties can discourage research collaboration between WEIRD and non-WEIRD states. Moreover, Leydesdorff & Wagner (2008) point out that while research at the national level is shaped by local policies, research at the international level is relatively unstructured. Things are different at the international level because the laws in nations do not directly apply. Research collaboration is often self-initiated at this level, which sometimes makes it difficult for researchers to collaborate.

2.2.5. Geographical location

Hoekman et al. (2010) stated that geographical areas do hinder research collaboration in some instances; researchers with similar research interests rarely meet each other due to their geographical location. For instance, two researchers one from north-America and the other from Africa (with similar research interest) will rarely meet to exchange ideas and thus creating fewer chances for research collaboration due to the physical distance between them. This suggests that there are fewer chances for researchers from different countries to

collaborate on a research project since there is a high possibility that these researchers could not be able to. Moreover, far more research collaboration opportunities are available for countries at the core than for countries at the periphery (Schubert & Sooyramoorthy, 2010).

Research marginalization occurs due to the geographical location that researchers are located, not necessarily because researchers are not good at what they do, which might qualify them for marginalization, but because they are situated in a certain location that is far away from potential research collaborators. Usually, people who are situated at the periphery are more marginalized than people who are situated in the centre, simply because they are further away, whilst those at the core are closer compared to their periphery counterpart countries (Schubert & Sooyramoorthy, 2010). For example, a good researcher from a developing country will be limited to collaborate with another researcher from a country far away from his/hers, especially in the absence of sufficient funding, advanced communication technology and proper resources which often bridge the geographical gaps between collaborating researchers at times (Schubert & Sooyramoorthy, 2010). Thus, giving the researchers from the developed countries an unfair advantage and power, should there be any collaboration amongst them.

2.3. Benefits of research collaboration

2.3.1. Funding

The level of funding in a research project sometimes does determine whether or not a research project will have multiple co-authorship or not (Clarke, 1967; Heffner, 1981; Smith, 1958, in Katz & Martins, 1997). The number of resources that a research project has, often determines how big the research project will be (ibid.). A big research project will have many researchers contributing towards it, thus creating opportunities for co-authorship in that particular project. Moreover, Price (1986 in Luukkonen et al., 1992) explains that researchers often have various reasons for entering into a collaborative research. For example, some enter into a collaboration because of monetary issues, whilst others due to facilities that the potential partner have at their disposal in order to successfully complete a research project.

2.3.2. Researchers skills and knowledge

Katz and Martins (1997) stated that even though researchers often collaborate with other researchers due to economic reasons, some researchers might collaborate with researchers to share the amount of work between the t involved parties, and to increase the quality of the final research output. Furthermore, interactions with other researchers and collaboration contributes greatly to the advancement of scientific knowledge (Bammer, 2008; Goffman & Warren, 1980; Maanten, 1970, in Katz & Martins, 1997) because research collaboration benefits researchers in terms of sharing skills and knowledge and it has a lot of potential for creativity compared to a research done by an individual (Beaver & Rosen, 1979, in Katz and Martins, 1997; Onyancha & Ocholla, 2007 in Onyancha & Maluleka, 2011). Furthermore, research collaboration is good for career development of individual researchers, and universities offer opportunities for individuals to expand their careers by working with other people, such as student-supervisor relationships where students are collaborating with their supervisors (Sheren et al., 2009; Quayle and Greer, 2014).

2.3.3. Status and recognition

When a researcher collaborates with high-status researchers in joint publications, their status research status also increases because their visibility and recognition are positively linked to that of the established researcher (Beaver & Rosen, 1979; Crane, 1972, in Katz & Martins, 1997). In the world of academia; status, visibility and recognition are important, as such, many researchers strive to achieve this status by collaborating with many authors of high status so that they can also be recognized. In as much as the researchers' goal is recognition and popularity, the end results of such goals are research collaboration relationships (O'Connor, 1970, in Katz & Martins, 1997). Moreover, Narin et al. (1991) stated that researchers tend to collaborate with each other because of various reasons like improving their visibility in the world of research (in Pouris & Ho, 2013). However, researchers of low status sometimes enter into collaborative relationships with researchers of high status strategically, because they have the potential to enhance their academic status (Wagner & Leydesdorff, 2005, in Sherren et al., 2009).

2.4. Bibliometrics, social network and co-authorship network

Bibliometrics is the use of journal articles and published papers to analyse the statistics so that the pattern of citations and relationships in the journals can qualitatively analysed (Thomson Reuters, n.d). Moreover, bibliometrics analysis involves the collection of journal articles and analysed to see how they are used by researchers or evaluated statistically. Bibliometrics is the most practical and effective way to study research collaboration within organizations and institutions (Glanzel & Schubert, 2005 in Quayle & Greer, 2014).

Social network analysis is based on the idea that actors that take part in social context can be manipulated statistically and be presented in graph form (Liu et al., 2005). Liu et al., (2005), further state that the graph of social network analysis will be represented by nodes (which are the actors being analysed) that show the tie (the relationship that nodes have with each other) or nature of the relationship that exist the actors in the graph. Social network analysis takes into account that individual actors interact with other actors, and explores how interactions between actors form part of a larger social network structures (Liu et al., 2005; Otte & Rouseau, 2002). Social network analysis also comprise of metrics which are the depth analysis of the network, these include node distance, and centrality (Otte & Rouseau, 2002).

Co-authorship in networks is the relationship that exists between nodes in a social network and makes it possible for social network to be analysed (Liu et al., 2005; Otte & Rouseau, 2002). According to Liu et al., (2005), state that co-authorship network implies that there is a relationship between two or more authors in a network and the relationship between the actors is significant in social network analysis. This means that without co-authorship will not be possible to utilize social network analysis.

Bibliometric, social network and co-authorship will be used in this to achieve the objectives of the study. Their applicability and use to this study will be discussed in detail in chapter 3.

2.5. The role that international societies play in research internationalization

International research societies such as the ISPP, Research Councils UK, Human Frontier Science Program, etc, aim at gathering researchers from different countries, so that they can share ideas and collaborate on research, which assists in increasing and encouraging

international research collaboration (ISPP, 2015, RCUK, 2015, HFSP, 2015). Research internationalization is important for these organizations because it is through international research collaboration that new knowledge production can be achieved. Furthermore, a scientific breakthrough can be reached when researchers from different parts of the world collaborates their scientific research from different parts of the world in order to understand the scientific phenomenon better (HFSP, 2015). Many international research organizations have one thing in common, that is to promote research collaboration of authors from different countries, thus aiming for research internationalization.

2.6. Conclusion

The current study aims to investigate patterns of international collaboration in the international society of political psychology. The survey of research literature highlighted shows that research collaboration occurs in many forms and is also understood in various ways by different individuals. In the past decades, according to literature, there has been an increase in international research collaboration. However, the dependency theory and the theory of marginalization suggests that although international research collaboration may be increasing, it may not be providing even benefits due to power and resource imbalances between countries at the core and the periphery. The literature shows a trend the research collaboration that countries at the periphery collaborate in research less often than countries that are at the core. Literature also suggests that researchers in developed countries collaborate amongst themselves much more often than with researchers or countries at the periphery.

The terms WEIRD will be used in this research most of the time to refer to western/ developed/core countries and non-WEIRD will be used to refer to non-western/developing/periphery countries.

The present study aims to explore the extent of how ISPP fostered activities have impacted research internationalization; and how it is represented across the developed, developing, and under-developed countries within various geo-political regions.

Chapter 3: Methodology

3.1. Research design

This study seeks to gain insight into the interaction patterns of scientific research collaboration within the international society of political psychology (ISPP). The ISPP's constitution suggests that the organization encourages authors from different countries to collaborate in research and over the years they have reached internationalization in research collaboration. The aim of this research is to investigate (1) what levels of internationalization are being achieved by the ISPP and (2) the collaborative patterns with respect to the dependency theory within the society. In other words, this study will explore the collaborative networks in the ISPP with respect to the collaborations between WEIRD and non-WEIRD countries, and the relative positions of these groups in the collaboration network.

This study makes use of a quantitative social network analysis which requires archival data to map the patterns of research collaboration within the ISPP. This was achieved by using bibliometric data from 2006-2014 from the ISPP annual meeting abstract booklets. Analyzing bibliometric data can be the most effective way to study research collaboration within organizations and institutions (Glanzel & Schubert, 2005; Lundberg, Tomson, Lundkvist, Skar, & Brommels, 2006 in Quayle & Greer, 2014). The following was extracted from the 2006-2014 publications of the ISPP database: the author's details, affiliation and country of affiliation. Using the author's details extracted from the bibliometric data, a social network analysis was used to map the patterns of collaborative connections to each other in the network. The next subsection will discuss the use of social network analysis, co-authorship analysis and bibliometrics in relation to the current study.

3.1.1. Social network, co-authorship, and bibliometrics

If each author is a node in a network, and each co-authored publication represents a link between two or more nodes; social network analysis allows the generation of social network maps and statistical analysis of social structure (Cobo et al., 2010; Otte & Rouseau, 2002).

Social network analysis takes into account that individual actors interact with other actors and for social network analysis, those interactions between actors are the focus for analysis (Liu et al., 2005; Otte & Rouseau, 2002). The aim of social network analysis is to describe, visualize and statistically model the resulting social network structure (Duijn & Vermunt, 2005).

Co-authorship networks are important because they provide a visible trace of research collaboration (Liu et al., 2005). In addition, co-authorship implies that two or more authors entered in a collegial relationship, which is an essential part of social network analysis. Furthermore, co-authorship social networks can map out the patterns of collaboration in scientific research and identify individual researchers' status and influence in the network.

3.1.1.1. Social network analysis: unit analysis

In a social network a 'node', this represents the individual/actor/author (Figure 2). When two or more actors/authors interact or collaborate with each other the connection is a 'tie, which represents the connection between individual/actors/authors in a network (Figure 2). In co-authorship analysis, each author is a node and each collaboration on a single paper is a tie (Wetherell et al., 1994 in Otte & Rouseau, 2002).

According to Wetherell et al. (1994), social network analysis focuses on the tie between actors/authors rather than the node (in Otte & Rouseau, 2002). The relationship that will be established by the ties which connect the nodes in a network is more important than the nodes themselves in a social network (Otte & Rouseau, 2002). Therefore, in social network analysis, the main focus is on the relationships that form network structures within individuals. In this study, the analysis will explore patterns of cross-national ties, and how these emerge and develop over time.

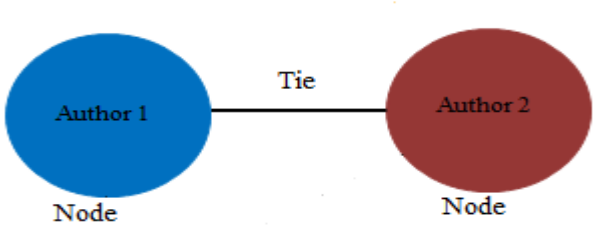

Figure 2. An illustration of the relationship between a node and a tie.

3.1.1.2. Social network analysis: Metrics

Node distance

There is a social distance between nodes, defined by the number of hops a node has to jump before reaching a specific node (Henneman & Riddle, 2005). In figure 3 node 1 is two hops from node three, and so the distance between them is 2.

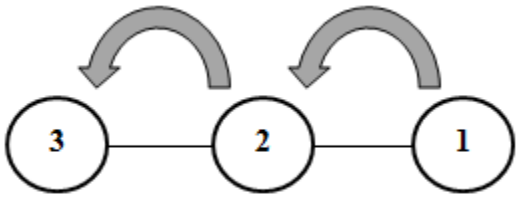

Figure 3. An illustration of the concept of distance that exists between nodes- and the number of jumps between nodes

3.1.1.3. Clusters and giant components

Social network analysis involves the formation of network patterns in network structures, these structures differ depending on how many nodes and ties are in the network. The more people collaborate in one paper, or the more an individual actor collaborates with other actors, the more ties there are in the network (Newman, 2001 in Kretschmer, 2004). Groups of collaborating authors are referred to as clusters in social network analysis (Otte & Rouseau, 2002). Figure 4, can be referred to as a cluster, since it maps the connectedness of many nodes, excluding node 1 and 2 (Henneman & Riddle, 2005; Krebs, 2011; Otte & Rouseau, 2002). Groups can be loosely or tightly connected, which relates to the density of a network structure. A close and connected cluster of the network have a high density.

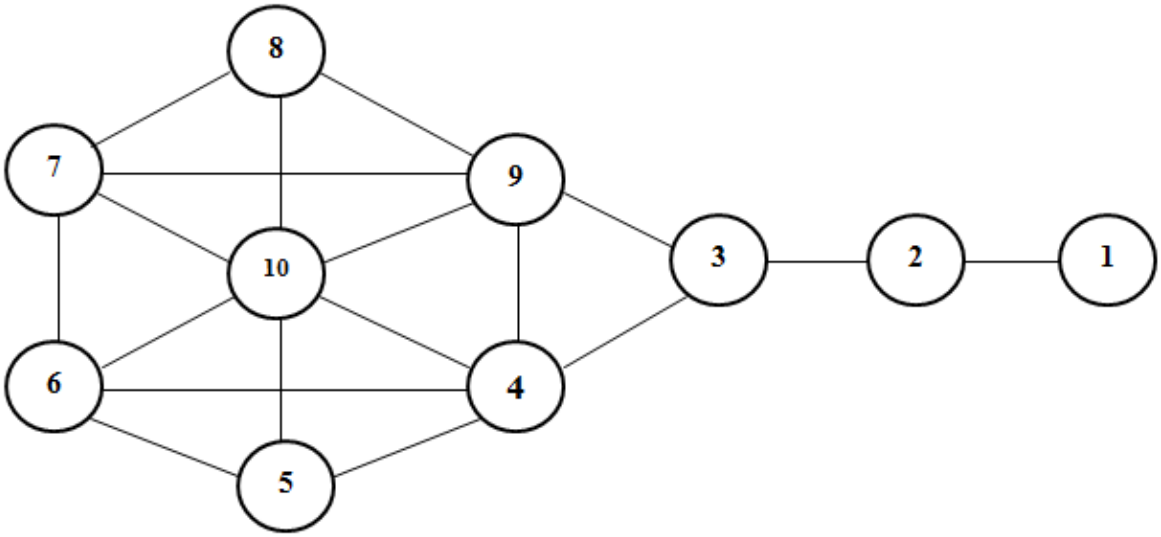

Figure 4. An illustration of a social network - 'the kite network'. Adapted from "Social Network Analysis, A Brief Introduction" by V Krebs, 2011. http://www.orgnet.com/sna.html

Kretschmer (2004) makes an interesting analogy about social networks and network structures; Kretschmer argues that actors in a social network are connected by other actors which create a cluster of the network. In a network, "the exchange of information between two co-authors, A and B, is particularly extensive and deep because of personal contacts, one can further presume that a part of this information also reaches another author, C, if B is in co-authorship with C, even if C is not a coauthor of A. The same also holds good for the information flow in the direction of another author D, in the case of a co-authorship between C and D, this principle can be further continued in the same manner" (Kretschmer, 2004, p. 410). This analogy about networks is an illustration of figure three, whereby one node ties with two different nodes that are not tied to each other, but the node that connects the two of them creates the social network structure.

Nodes in a social network differ in terms of centrality; some are more peripheral than others. The following concepts can be used to describe centrality in social networks: degree centrality, betweenness centrality, closeness centrality and node distance:

Degree centrality

Degree centrality refers to the number of connections or ties an individual node has with other nodes in the network (Henneman & Riddle, 2005; Krebs, 2011; Newman, 2010; Otte & Rouseau, 2002). The highest degree centrality means that the node (or author) is highly connected to others. A node with a high level of degree centrality has many opportunities in a network of distributing resources and connecting other nodes with each other so that there can be collaboration between many nodes that are connected to the node with a high degree of centrality (Newman, 2010). In figure 4 the node that has a degree of centrality is node 10 since it is the one with many ties connected to it (Krebs, 2011).

Closeness centrality

The closeness centrality refers to closeness (ie. the inverse of distance) of a node to all other nodes (Henneman & Riddle, 2005; Krebs, 2011; Newman, 2010; Otte & Rouseau, 2002). Where degree centrality simply counts the number of direct connections a node has in a network, closeness centrality suggests that the node (author) has access to all the other nodes (authors) with a short path distance (ibid.).In figure 4, the nodes that have the highest closeness centrality are node 4 and node 9, because they have the shortest total distance to every other node in the network (Krebs, 2011).

Betweenness Centrality

A node with high betweenness centrality is one that lies on the shortest path between large numbers of other node pairs. Therefore, it links other nodes in the network even if it does not have many ties itself (Henneman & Riddle, 2005; Krebs, 2011; Newman, 2010; Otte & Rouseau, 2002). A node with a high level of betweenness is important in a network since it has a bridging role, playing an important role in the flows of information and other resources in a network, and connecting nodes form one cluster to another (Krebs, 2011). In figure 4, the node that has the highest betweenness centrality is node 3, because it connects the cluster with the nodes outside the cluster, thus making it an important node because of its role and regarded to have high betweenness centrality (Krebs, 2011).

3.1.1.4. Social network analysis: conclusion

Social network analysis shows how collaborations (ties) between authors (nodes) form structured networks can be understood at different levels. The ISPP deals with authors from

different countries with the hope of increasing research collaboration within and between these countries so as to reach internationalization in research collaboration. The ISPP as a social structure has its own network resulting from how the authors interact with each other from one country to the other. Social network analysis will assist in understanding the ISSP network; the maps and patterns which social network analysis identifies will clarify the connections of authors and co-authorship in the ISPP. This research primarily aims to determine: 1) the existence and nature of research internationalization within ISSPP (2) the extent of collaboration between core countries, (3) the extent of collaboration between core and periphery and (4) the extent of collaboration between countries in the periphery.

3.2. Sample

The ISSP hosts annual conferences, whereby members' and non-member authors submit abstracts and present their work. Although some of the authors that take part in the ISPP annual conferences are not members of the ISPP, they will be included in this analysis since they are part of the ISPP's core activities. These meetings generally alternate between venues in Europe and North America in successive years. For each meeting, a programme is published containing abstracts and author details for each paper read and presented at the conference.

The sample of the study is drawn from this archival data from the ISPP annual meetings from the year 2006-2014. The sample from the year 2006-2014 was selected because it is a period close to a decade and it will increase the chances of the network's connections and density. As such, these years will allow the study to have an overview (or research data) of nearly a decade. The study had hoped to sample a full decade, but the ISPP could not provide consecutive records of annual meetings prior to 2006. This time frame is sufficient to map patterns of collaboration and to explore whether the patterns of collaboration are either increasing or decreasing and if they have remained the same.

The sample of annual meeting programs was provided by the ISPP central office. One year (2008) was missing; however, the programme chair for that year was able to provide the abstract for that year. The programs provided bibliometric data including individual authors' details pertaining to country and university of affiliation. This information is important for

measuring patterns of co-authorship from different countries. However, a parallel study of mapping patterns of collaboration in the society's journal is considered, but those results will not be commented on in this dissertation.

3.2.1. ISPP Sample

The sample consisted of all authors represented in the ISPP Annual Meeting programmes from 2006 – 2014. This sample included 4260 authors in 3109 publications connected by 6884 co-authorship ties. The sample included 1151 (27.0 %) single-author publications which are not useful for most parts of this analysis.

Of the 4260 authors, there were 70 (1.6 %) whose countries could not be resolved from the information available in the ISPP programmes. These authors were not dropped from the analysis, however, to ensure that their contribution is taken into consideration in the network. The sample included 8 geo-political regions: North America with 2 (2.7%) countries and 1689 (39.5 %) authors, Western Europe with 19 (25.6%) countries and 1451 (34.1 %) authors, the Middle East with 6 (8.1%) countries and 410 (9.6 %) authors, Eastern Europe with 19 (25.6%) countries and 269 (6.3 %) authors, South Central America with 7 (9.4%) countries and 159 (3.7 %) authors, Australasia with 3 (4.0%) countries and 98 (2.3%) authors, Asia with 15 (20.2%) countries and 77 (1.8%) authors, Africa with 3 (4.0%) countries and 44 (1.0 %) authors. The sample included 3669 (86.1 %) authors from the category WEIRD with 26 (35.1%) countries and 521 (12.2 %) non-WEIRD with 48 (64.8%) countries. The frequency and percentage of countries are provided in table 2 below. See appendix A for the details of all the full sample of countries.

Table 2: *Top 10 countries, with geo-political region and category*

Country	Geo-political region	Category	Frequency	%
USA	North America	WEIRD	1573	36.1%
UK	Western Europe	WEIRD	340	8.0 %
Israel	Middle East	WEIRD	306	7.2 %
Germany	Western Europe	WEIRD	262	6.2 %
Spain	Western Europe	WEIRD	189	4.4 %
Italy	Western Europe	WEIRD	168	4.0 %
Netherlands	Western Europe	WEIRD	119	2.8 %
Canada	North America	WEIRD	109	2.6 %
Turkey	Middle East	WEIRD	94	2.2 %
Total (top 10 countries)			3160	73.50 %

3.2.2. Ethical issues relating to the sample

The sample of the study is accessed through the ISPP database for published work. The study does not include any human participants, only archival data and, therefore, there are no serious ethical issues concerning human participants. Although the analysis of patterns of collaboration may harm the authors in terms of their reputation, this study would be exempt from denigrating reputation since the information used has been subject to public scrutiny when they were published a long time ago. Therefore, no additional risk is anticipated in this study because the public already have the published papers. Due to the archival nature of the data that was used in this study, the data will not be destroyed after the study has been completed. Nevertheless, ethical clearance for this study was applied for and granted by the University of KwaZulu-Natal (UKZN) social science research ethics committee (see appendix C; HSS/0361/014M).

3.3. Validity, Reliability and Rigour

Validity is the degree to which the research instrument has measured what it is intended to measure (Van Der Riet & Durrheim, 2006). Since co-authorship analysis, aims to measure links between co-authors, the relationship between data and representation is extremely close in this type of analysis. The methodology used in this research if it can be done the same way using the same tools of analysis will yield to similar results.

Reliability is the extent to which if the same study can be repeated to another population it can yield the same results as it did in previous studies (Van der Riet & Durrheim, 2006). If the study is to be conducted again in a different place or context, the same instruments that are used in this study would be utilised again to maintain consistency of the results of the study, so that it can yield to the similar results. Since the proposed study is primarily descriptive, reliability is not at issue in this study.

Generalizability is the extent to which the research data and results can be generalised or applied to the population at large (Van der Riet & Durrheim, 2006). However, the findings of this study will not be generalised. Since this study is primarily descriptive, generalizability is not at issue.

3.4. Detailed data collection procedure

3.4.1. Procedure

The ISPP central office was contacted to request access to archived programmes for their annual meetings. The time frame for the bibliometric data used in this research was the years 2006-2014, which was determined by the records made available by the ISPP. One year's programmes were not on file, and these were requested and received from the programme chair for that year.

3.4.1.1. Bibliometric data from the ISPP

The ISPP bibliometric database included abstracts and author details from the year 2006-2014 for papers presented at their annual conferences. Each abstract contained the author's

details, name/initial and surname, the University of Affiliation. The abstract journals did not include or show the country of affiliation, the geo-political regions that the countries belong to and the classification of the country if it belonged to a WEIRD or non-WEIRD country. This missing information from the abstract journal was then searched by the researcher, using the authors' university affiliations as an index in order to locate the country of origin or geo-political region of the concerned authors. Once the country has been identified, the data was then coded in accordance with the countries' geo-political region, since it was relatively easier to classify and code the data in that manner. These classifications are shown in Table 3 and 4, however, some authors did not have universities linked to the author, which made it difficult to find their countries.

Table 3: WEIRD and non-WEIRD countries

WEIRD countries	Non-WEIRD countries
Australia	Argentina
Austria	Brazil
Belgium	Chile
Canada	Colombia
Denmark	Venezuela
Finland	Bulgaria
France	Cambodia
Germany	China
Greece	India
Guam	Indonesia
Iceland	Japan
Ireland	South Korea
Israel	Lebanon
Italy	Malaysia
Malta	Philippines
Netherlands	Singapore
	Sri Lanka
	Thailand
	Uzbekistan
	Vietnam
	Costa-Rica
	Croatia
	Czech Republic
	Egypt
	Nigeria

New Zealand	Estonia
Norway	Estonia
Portugal	Georgia
Spain	Hungary
Sweden	Iran Iraq
Switzerland	Kazakhstan
Turkey	Kyrgyzstan
United Kingdom	Latvia
United States	Lithuania
	Macedonia
	Montenegro
	Poland
	Romania
	Russia
	Sarajevo
	Serbia
	Slovakia
	South Africa
	United Arab Emirates

The classification of countries as WEIRD and non-WEIRD is adopted from Heinrich et al. (2010). Heinrich et al., (2010) argues that the world is made up of two classifications of countries; which are Western Educated Rich and Democratic (WEIRD) and non-WEIRD, which is the opposite of WEIRD. Therefore, these countries were classified in their respective category according to these standards of WEIRD and non-WEIRD. Turkey and Israel can be considered as those countries that belong to both WEIRD and non-WEIRD countries. According to the World Bank (2014), Turkey fell under the upper middle income economies and it is also a member of the organization for economic co-cooperation and development (OECD, 2014), whilst Israel was classified under the high income economies and it is also a member of the OECD (World Bank, 2014; OECD, 2014). Therefore in this research, Turkey and Israel were treated as WEIRD countries. Table 3 above shows a

distinction between countries according to WEIRD and non-WEIRD classification, whilst table 4, shows countries according to their geo-political regions.

Table 4: Geo-Political regions

North America	South central America	Africa	Middle East	Asia	Australasia	Western Europe	Eastern Europe
Canada United States	Argentina Brazil Chile Colombia Venezuela Costa-Rica	Egypt Nigeria South-Africa	Israel Turkey	Cambodia China India Indonesia Japan S. Korea Lebanon Malaysia Philippines Singapore Sri Lanka Thailand Uzbekistan Vietnam	Australia Guam Iran Iraq Kazakhstan Kyrgyzstan New Zealand United Emirates Uzbekistan	Austria Belgium Denmark Finland France Germany Greece Iceland Ireland Italy Malta Netherlands Norway Portugal Spain Sweden Switzerland United Kingdom	Bulgaria Croatia Czech Republic Estonia Estonia Georgia Hungary Latvia Lithuania Macedonia Montenegro Poland Romania Russia Sarajevo Serbia Slovakia

3.4.1.2. **Steps taken to collect data**

The researcher used the abstracts to create a database containing the title, author, co-authors, university of affiliation for each author and co-author, countries of authors and co-authors,

and the year of publication. The abstract database then has been used to access co-authorship and internationalization in research collaboration within the ISPP.

This section contains a step-by-step description of how the data were collected, and how authors and co-authors' details were extracted from the ISPP conference programmes to answer the research questions.

Step one: Available ISPP conference programmes were accessed online. Those that were not online were requested from the ISPP central office by email. The central office did not have the abstracts for 2008 annual conference, the chair of the conference was conducted directly contacted and was able to provide the information. Making use of this method, continuous records were collated for the period of the years 2006-2014.

Step Two: The researcher manually extracted the authors and co-authors' details; this included their name/initials and surname, the university of affiliation, the country of affiliation, the geo-political region, and country's category/classification (i.e. WEIRD or non-WEIRD, see table 3 and 4). This information was extracted from the abstract journals from the years 2006-2014. However, authors who did not record their affiliation with a university made it difficult for them to be accurately linked to a country.it was difficult to accurately associate a country. These authors were categorized as having unknown countries. To illustrate this, an author can be affiliated with the Social Psychology Institute; such affiliation makes it difficult to resolve the country of affiliation since there are many Social Psychology Institutes in the world. This data entry procedure was completed in Microsoft Excel.

Step three: Data Processing - as author details were entered, a co-authorship link-list was being created simultaneously, representing ties between authors on a given publication. The link-list included the co-authors' names and a target name for the co-authors and the year of publication, see figure 5 and table 5 below, for more details on the link list data format. This procedure was done using Microsoft Excel. Cobo et al. (2011) stated that bibliometric data usually contains errors because the authors' details might be misspelled (e.g. the author's name), and sometimes an initial is used in one journal and a full name in another. Other authors might publish and co-author in multiple papers, thus making their details appears multiple times in the bibliometric data. This was a problem because there was inconsistency in the record of names used in the abstract journal, which resulted in author homonymy. Author homonymy refers to a case where common first names, last names, initials, and the listing of the same author in different formats are used or found in a bibliometric data. The journal abstract was inconsistent of keeping similar author records over time, sometimes they

would use the full names of the author, an initial or multiple initials across different publications, which made it difficult to identify if it was one and the same author or multiple other authors. For purposes of this research, it was decided that authors with the same surname but different initials were actually treated as two or more individual authors instead of being regarded as one and the same author. However, the authors' affiliation with a university helped to clarify their identity or determine whether two entries with the same name were the same author. In an event whereby the author changed universities between the years 2006 and 2014, the author was treated as someone with two countries. After the duplicates were detected, the researcher deleted repeated authors in the authors' details database, so that only one unique author's details remains, this process is called data reduction (Cobo et al., 2011).

Step five: After the data were cleaned through the process of detecting duplication and data reduction; the data were saved in comma-separated values (CSV) format. The CSV file was then imported into a social network analysis package called *Visone* (http://Visone.info/) for social network analysis and mapping.

Source Name	→	Target Name	Year
Elena_Trifiletti	→	Loris_Vezzali	2006
Elena_Trifiletti	→	Dora_Capozza	2006
Elena_Trifiletti	→	Luca_Andrighetto	2006
Loris_Vezzali	→	Dora_Capozza	2006
Loris_Vezzali	→	Luca_Andrighetto	2006
Dora_Capozza	→	Luca_Andrighetto	2006

Figure 5: An example of a Link-list with four authors collaborating in a publication; namely: Elena Trifiletti, Loris Vezzali, Dora Capozza and Lca Andrightto, and year of publication 2006.

Table 5: Example of Author's details

Name	University	Country	Geo-political region	WEIRD/non-WEIRD
Luca Andrighetto	University of Padova	Italy	Western Europe	WEIRD
Elena Trifiletti	University of Padova	Italy	Western Europe	WEIRD
Loris Vezzali	University of Padova	Italy	Western Europe	WEIRD
Dora Capozza	University of Padova	Italy	Western Europe	WEIRD

3.5. Data Analysis

This section will discuss and outline the quantitative data analysis procedure taken in order to meet the aims and objectives of this research. The main aim of this research was to investigate internationalization in research collaboration that exists within the ISPP. The researcher utilized social network analysis software to analyze the data. In using social network analysis, the researcher used abstract data from the collected material to map patterns of internationalization.

3.5.1. Social network analysis procedure

After the link-list was saved in CSV format, it was imported to Visone and a visualisation of the co-authorship network was generated. The network contained nodes which represented each author from the abstract journals from the ISPP and the nodes were connected by a tie or a link which represented a collaboration between nodes (see figure2). The author's details were then also imported to Visone so that more information can be added to each individual node.

The nodes contained that author's name, university of affiliation, country of affiliation, geo-political region and the WEIRD or non-WEIRD category for their country. The nodes were visualised by different colour coding for each country, geo-political region the WEIRD or non-WEIRD country category. The colour coding was for better visualisation of relationships between authors of a different country, geo-political region and the WEIRD or non-WEIRD category. Visone also allowed the opportunity to calculate social network metrics between nodes and links, a detailed discussion of these calculations will be discussed below. After

these metrics were calculated in Visone, they were exported to SPSS for conventional statistical analysis to explore the statistical differences between WEIRD and non-WEIRD authors using an independent T-test sample calculations, where both WEIRD and non-WEIRD were regarded as independent variables. The alpha level was always set to 0.05, even in situations where it is not stated.

The first part of the analysis was paying specific attention to internationalization which took place within and between countries where each author is from, and the extent of research collaboration between these countries. The second part of the analysis focused on the depth of internationalization that took place within and between geo-political regions and their classification as WEIRD and non-WEIRD nations. This analysis sought to explore the relationship that countries at the periphery and countries at the core have in terms of research collaboration within the ISPP. These analyses will be discussed in detail in the following sections

3.5.1.1. Internationalization between countries

The researcher has extracted useful information such as authors, co-authors, and countries of origin whilst analyzing research internationalization within countries and among their authors in the ISPP (Cobo et al., 2011). A cross-national collaboration analysis has been made; this was the process whereby the researcher was looking at links and patterns of collaboration between countries. The links and nodes between, were then counted to describe the pattern of relations between countries. Moreover, the researcher looked at the years in which the authors have published their work in order to determine whether cross-national links is increasing or decreasing. This process was achieved through the following steps.

Step one: A social network analysis was done in Visone social network, metrics were exported, and statistical analysis was done in SPSS. The main focus in this analysis was the country of each author and how many publications each country had in the overall sample of authors. This was achieved by the utilizing both Visone and SPSS. Visone was used to visualize the countries that individual and co-authored publications came from and map the

patterns of collaboration within these countries. SPSS was utilized to describe the frequency of each country and the publications that each country had in the sample of authors.

3.5.1.2. Amount of international collaboration

The second part of the analysis included analyzing internationalization in depth in terms of categorizing the links as WEIRD and non-WEIRD countries and looked at the links and patterns of research collaboration between WEIRD and non-WEIRD countries.

The following steps discussed in detail how internationalization in research collaboration between WEIRD and non-WEIRD countries was achieved in this research.

3.5.1.2.1. Amount of internationalization between countries

Step one: social network analysis was conducted in visone, where by the nodes which represented the countries were color coded. This was used to aid visualization of the patterns of collaboration between countries. The countries that were used to assess this kind of internationalization are countries that were found in the giant cluster of the network.

Step two: a statistical analysis was done in SPSS to calculate the frequency of countries in the ISPP annual conferences from the years 2006-2014.

3.5.1.2.2. Amount of internationalization between WEIRD and non-WEIRD nations

Step one: A statistical analysis was conducted using SPSS to calculate the percentage and frequency of geo-political regions of each author and the percentage of the categorization of countries as WEIRD and non-WEIRD countries represented in the sample of authors. This analysis included individual publication and co-authored publication.

Step two: A social network analysis was undertaken in Visone visualizing authors' geo-political regions and the classification of their countries as WEIRD and non-WEIRD.

Step three: A social network analysis of the map was done to measure (1) the distance between WEIRD and non-WEIRD nodes on the map and (2) an analysis that measured centrality between WEIRD and non-WEIRD nodes and links. The next section will discuss the analysis of various social network metrics in more detail.

3.5.1.2.3. The increase and decrease in collaboration in the ISPP

Assessing whether or not research collaboration is decreasing or increasing in the ISPP from 2006-2014 was done as follows:

Step one: The number of authors and collaborations each year were determined using Visone.

Step two: The number of collaborations for each year were divided by the number of authors represented each year. This was repeated for each of the annual conferences of the ISPP from 2006-2014. The descriptive view of collaboration ratio was compared across years to determine whether or not internationalization decreased or increased in the ISPP.

3.5.1.3. Metrics analysis

Section 4.1.3 above provides a detailed explanation of social network analysis is and the subsections of metric analysis. Newman (2010) stated that metric analyses are important measures in social network analysis. Metric analysis measures centrality between nodes and links/ties and the relationship they have with each other (Newman, 2010). Social network analysis provides the opportunity to use statistical analysis on the generated map, which allows more measurements to take place on the network, like the distance of nodes, average degrees, connected components (Carrington et al., 2005; Cook & Holder, 2006; Skillicorn, 2007; Wasserman & Faust, 1994 in Cobo et al., 2011).

This research has chosen to use centrality as a measure of the relationship between WEIRD and non-WEIRD countries to investigate whether there is real internationalization in research collaboration between authors in the ISPP. Centrality was measured using the following measures of centrality also discussed in detail in section 4.1.3 above: degree centrality, betweenness centrality and closeness centrality. These metrics were calculated in Visone and exported to SPSS which was used to run independent samples t-tests.

3.5.1.3.1. Distance analysis

Path analysis involved calculating the distance between each author/node. The distance calculations were intended to calculate the distance between WEIRD and non-WEIRD countries. The shortest path from each non-WEIRD author to each WEIRD author was calculated. Distance was calculated in Visone then imported to SPSS for statistical analysis.

Chapter 4: Results

4.1. Co-authorship Representation

Before continuing with the co-authorship analysis, authors of single-author publications were identified and dropped from the sample. The characteristics of authors of single-author publications are described and compared to the collaborative authors below.

4.1.1. Single Author characteristics

Excluding collaborative publications, the sample included 920 (79.9 %) single authors that belonged in the WEIRD category and 202 (17.5 %) single authors that belong in the non-WEIRD category. The geo-political regions: North America (N=431, 25%), Western Europe (N=329, 22.6%), Middle East (N=140, 34.1 %), Eastern Europe (N=89, 21.7 %), South Central America (N=56, 35.2 %), Asia (N=31, 40.2 %), Australia (N=27, 27.5 %) and Africa (N=19, 43.1 %).

The sample included single authors from countries: USA (N=409,35.5 %), Israel (N=108,9.4 %), UK (N=86,7.5 %), Germany (N=56,4.9 %), Russia 40 (3.5 %), Spain 39 (3.4 %), Netherlands (N=27,2.3 %), Turkey (N=24,2.1 %), Canada (N=22,1.9 %) and Italy (N=22,1.9 %). There are (N=29, 2.5 %) single authors with unresolved countries, geo-political region and category of WEIRD and non-WEIRD. Refer to appendix A for more details on the other countries.

4.1.2. Collaborative author characteristics

When the individual publications were excluded to analyse co-authorship only, there were 2749 (88.4 %) authors from WEIRD countries that co-authored publications and 319 (10.3 %) non-WEIRD authors that co-authored publications. By geo-political region, North America dominated (N = 1521, 40.2 %) followed by Western Europe (N = 1122, 36.0 %); the Middle East (N = 270, 8.7 %), Eastern Europe (N = 180, 8.8 %), South Central America (N = 103, 3.3 %), Australasia (N = 71, 2.3 %), Asia (N = 46, 1.5 %) and Africa (N = 25, 0.8 %).

When looking at collaborative publications by country, the: 10 countries with the highest numbers of authors in co-authored publications were: the USA (N = 1164, 37.4 %); the UK

(N = 254, 8.2 %); Germany (N = 206, 6.6 %); Israel (N = 198, 6.4 %); Spain (N = 150, 4.8 %), Italy (N = 148, 4.7 %); the Netherlands (N = 92, 3.0 %); Canada (N = 87, 2.8 %); Turkey (N = 70, 2.3 %); and Australia (N = 60, 1.9 %). Refer to appendix A for more details on the other countries.

4.2. Internationalization in research collaboration in countries

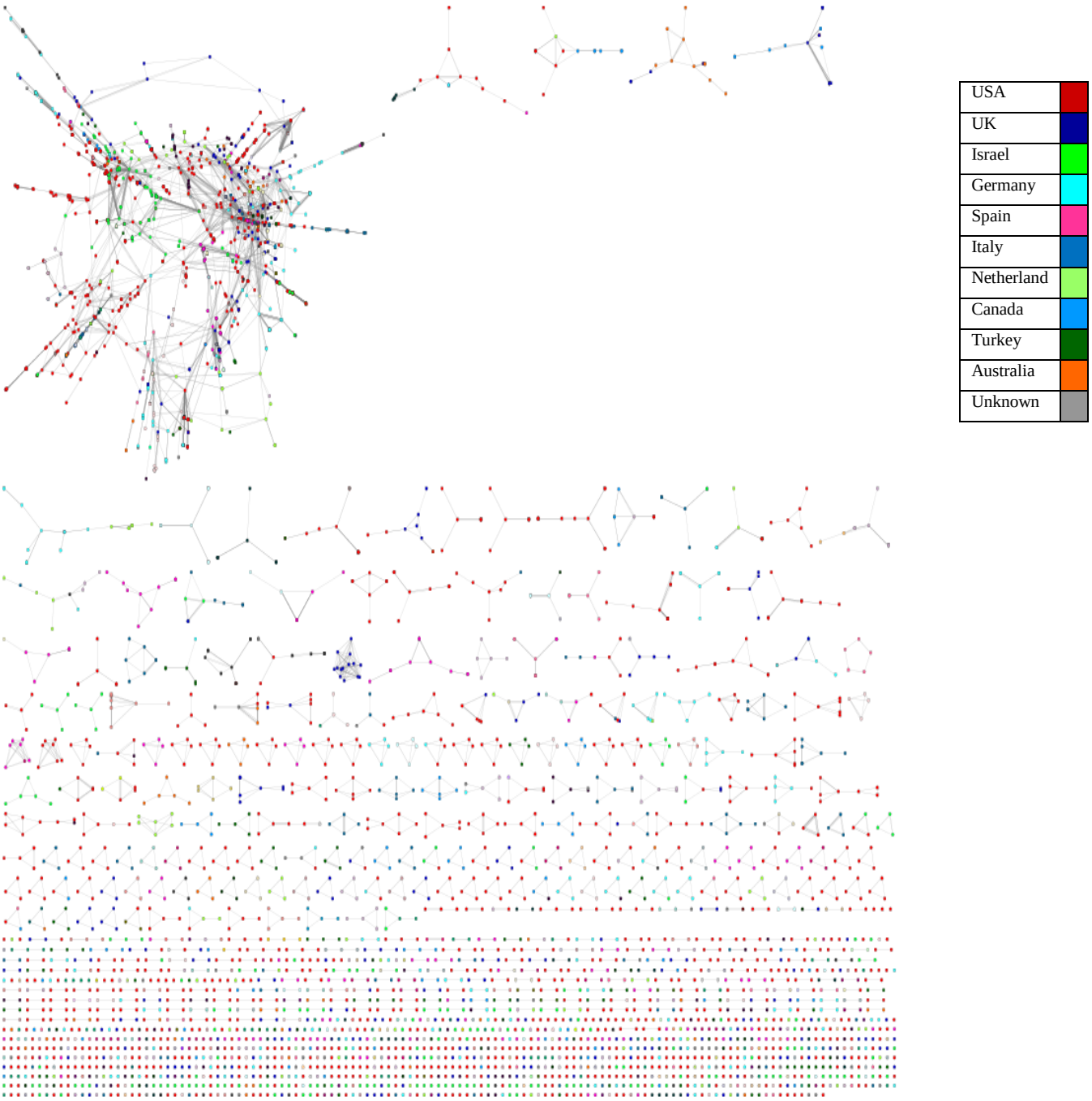

Figure 6: Representation of all the countries with multi-authored papers and single papers

Figure 6 above shows a network of all the countries that are represented in the sample. The most visible countries are the one's colour coded in figure 6, which are: USA, UK, Israel, Germany, Spain, Italy, Netherlands, Canada, Turkey, and Australia. The dominance of these countries in the figure suggests that they have a high representation and collaboration with other authors from different or from the same country in the network. Out of the 74 countries that were part of the sample, the 10 mentioned above have a very high participation compared to the other countries. Therefore, countries with high visibility in the network indicate that those countries have a high level of research collaboration.

The majority of authors are connected in small collaborative groups that are isolated from the rest of the giant component on the top left corner of figure 6. There were 1791 (57%) authors with 2039 (29.6%) collaborations of small groups outside the giant component. The small groups ranged from a collaboration of 2 to 13 authors. There were 1538 (49.4%) WEIRD authors that were not in the giant component, and 200 (6.4%) non-WEIRD authors that were outside the giant component. There were 1787 (25.9%) authors who collaborated between WEIRD authors, 132 (1.9%) between non-WEIRD authors, and 111 (1.6%) between WEIRD and non-WEIRD authors which were not in the giant component.

A chi-square was run to check the association between WEIRD and non-WEIRD authors in the giant component and non-giant component. There was no significant association between WEIRD authors in the giant component and WEIRD authors not in the giant component, χ^2 (3) =4, *p*=. *261*. This suggests that WEIRD authors are wired the same way both in the giant and non-giant components.

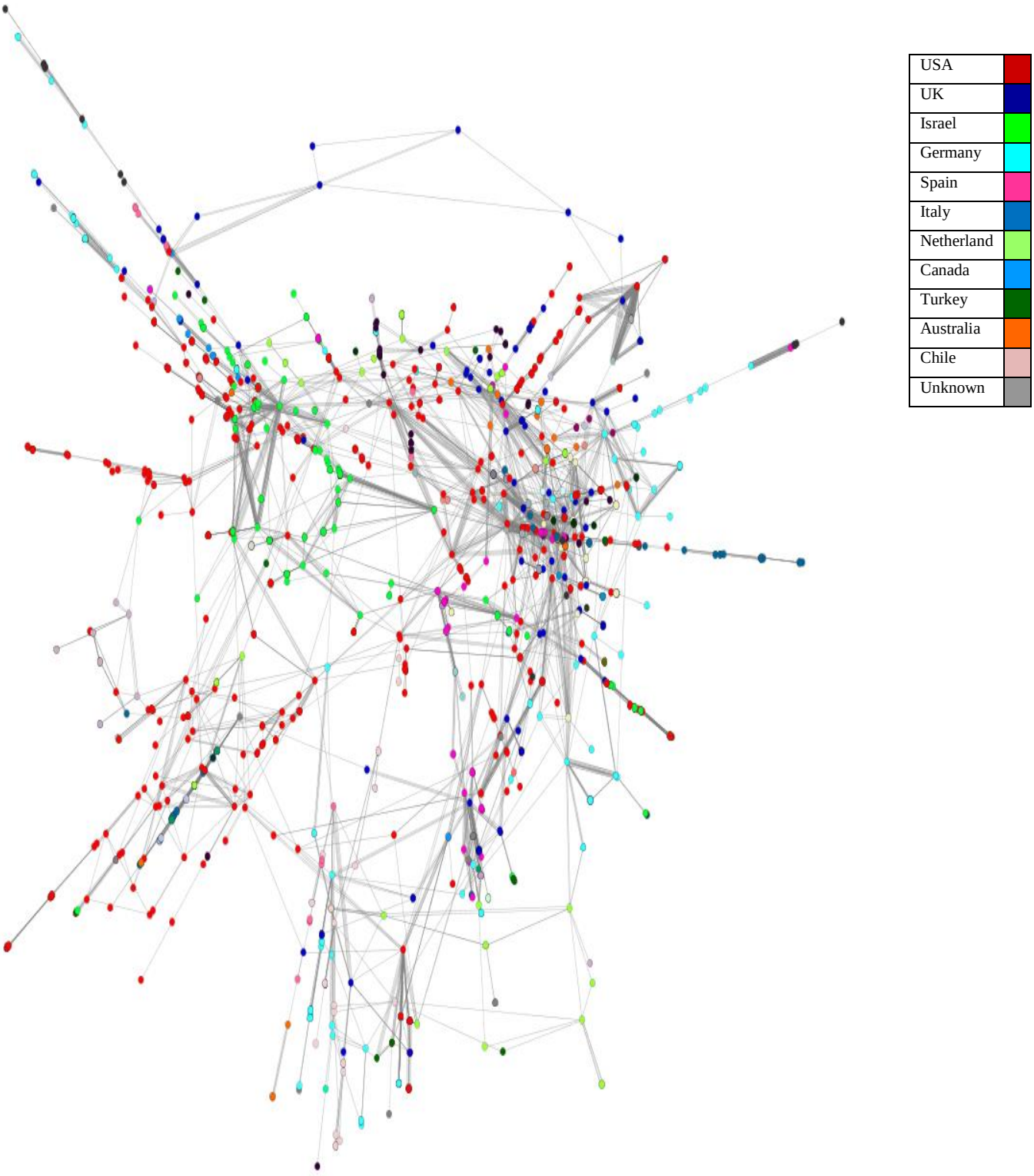

Figure 7: A representation of all the countries with multi-authored papers in the giant component

The above figure represents a visualisation of the giant component of the sample. In network terms, authors who are part of the giant component have much greater connectivity in the network. In figure 7 and table 6, USA, Israel,UK, Germany, Italy, Spain, Netherlands, Switzerland, Poland, and Chile are visible, which suggest that they have many authors represented. The other countries that are less visible in the giant cluster were likely to have low levels of collaboration. Table 6 below suggest that countries such as Vietnam, Venezuela, Ukraine, Scotland, Sarajevo, Iceland, Egypt, Columbia and Azerbaijan had a few representations of authors in the giant component, also evident by less visibility in figure 7.

Table 6: Tabulation of countries and authors in the giant component

Countries in Giant component	Number of authors per country
USA	522
Israel	136
UK	128
Germany	117
Italy	63
Spain	61
Netherlands	54
Switzerland	43
Poland	32
Chile	28
Belgium	26
Canada	22
Australia	22
Portugal	17
Turkey	15
South-Africa	14
Ireland	13
Denmark	11
Sweden	9
Russia	7
India	6

Croatia	6
Serbia	6
New-Zealand	5
Argentina	5
China	5
France	4
Brazil	4
Romania	3
Greece	3
Taiwan	2
Lebanon	2
Austria	2
Cyprus	2
Hungary	2
Vietnam	1
Venezuela	1
Ukraine	1
Scotland	1
Sarajevo	1
Iceland	1
Egypt	1
Columbia	1
Azerbaijan	1

4.2.1. Within-country collaboration

The figure 8 and table 7 below shows a proportion of ‘within’ country collaboration. In general, the countries with high levels of co-authorship also have high levels of within-country collaboration.

Table 7: Tabulation of countries with highest within-collaboration in the network

Country	In Giant	Not in Giant	Total
USA	1370	666	2036
Israel	325	44	369
Germany	227	71	298
UK	220	197	417
Spain	167	112	279
Chile	153	0	153
Italy	124	120	241
Switzerland	88	10	92
Netherland	85	34	119
Poland	48	22	70
Total: 10	2807	1276	4074

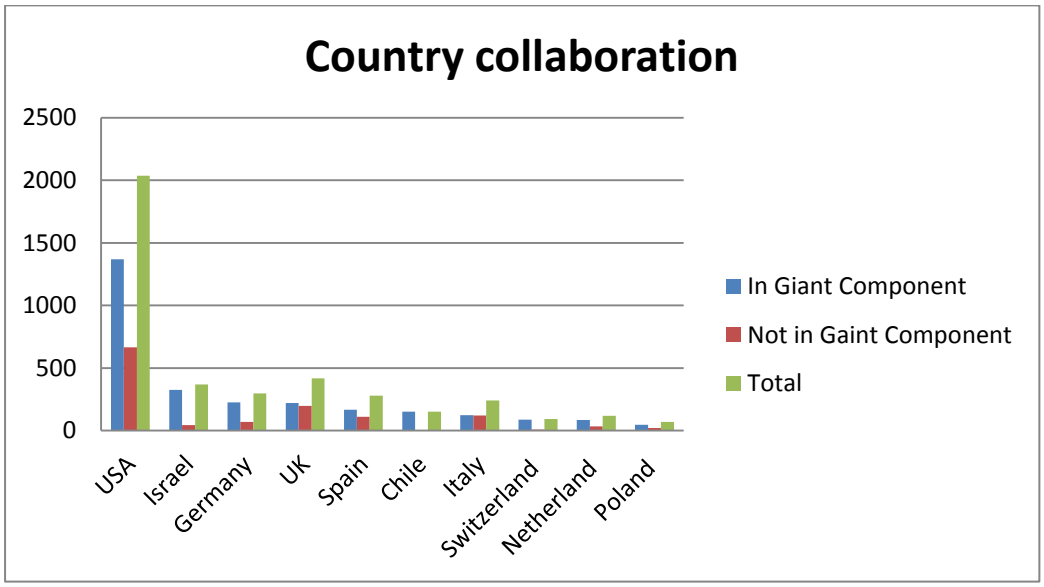

Figure 8: A bar graph representation of research collaboration within countries in the network. The y-axis represents the number of within country collaboration and the X-axis represents the country of authors.

Figure 8 and table 7 above shows that in the entire network there are countries that had high collaboration in the giant component, out of the giant component and in the network. Countries such as USA and Israel had the highest collaboration within themselves in the giant

component, not in the giant component and in the network. While countries such as the Netherlands and Poland had high collaboration within themselves but they were still lower compared to USA and Israel's collaboration in the giant component, out of the giant component and the network. Most of these countries with high levels of within country collaboration belonged to the WEIRD category.

There are countries that belong to the non-WEIRD category with very low levels of within country collaboration. These are countries such as South Africa and Russia. Refer to appendix A1 & 3 for more information on within country collaboration for the other slightly high links or collaboration.

4.2.2. Basic levels of internationalization –Inter-country collaboration

Figure 9 and table 8 below show research collaboration between countries on selected countries that had the highest collaborations.

Table 8: A tabulation of countries with the highest inter-collaboration as classified in the giant component and not in the giant component.

Countries	In Giant	Not in Giant	Total
USA & Israel	235	11	246
USA & Switzerland	146	7	153
USA & UK	144	32	176
USA & Ireland	66	0	66
UK & Ireland	43	0	43
USA & Spain	42	3	45
Germany & Belgium	37	2	39
UK & Portugal	35	0	35
Germany & Chile	31	0	31
USA & Italy	30	6	36
USA & Germany	29	13	42
USA & Netherland	29	10	39
UK & Germany	28	8	36
UK & Netherland	27	1	28
UK & Chile	21	0	21
UK & Israel	20	6	26
UK & Switzerland	20	0	20
Germany & Denmark	19	0	19
USA & Turkey	18	4	22
UK & Canada	17	10	27

USA& Chile	14	1	15
UK & Australia	14	3	17
USA & Belgium	13	2	16
USA & Australia	13	7	20
UK & South Africa	13	1	14
UK & Turkey	11	0	11
USA & Denmark	10	1	11
USA & Sweden	10	4	14
USA & South Africa	9	0	9
USA & Canada	9	5	14
UK & Italy	9	2	11
Israel & Germany	9	2	11
USA & Portugal	8	3	11
UK & Spain	8	1	9
Israel & Netherland	8	0	8
Spain & Netherland	8	0	8
Israel & Canada	7	0	7
Germany & Poland	7	0	7
UK & Russia	6	0	6
Israel & Italy	6	8	14
Germany & Australia	6	1	7
Netherland & Canada	6	1	7
USA & Poland	5	1	6
UK & Poland	5	0	5
Israel & Spain	5	5	10
Spain & Italy	5	1	6
Spain & Chile	5	0	5
Switzerland & Belgium	5	0	5
UK & Belgium	4	0	4
Total: 50	1275	162	1438

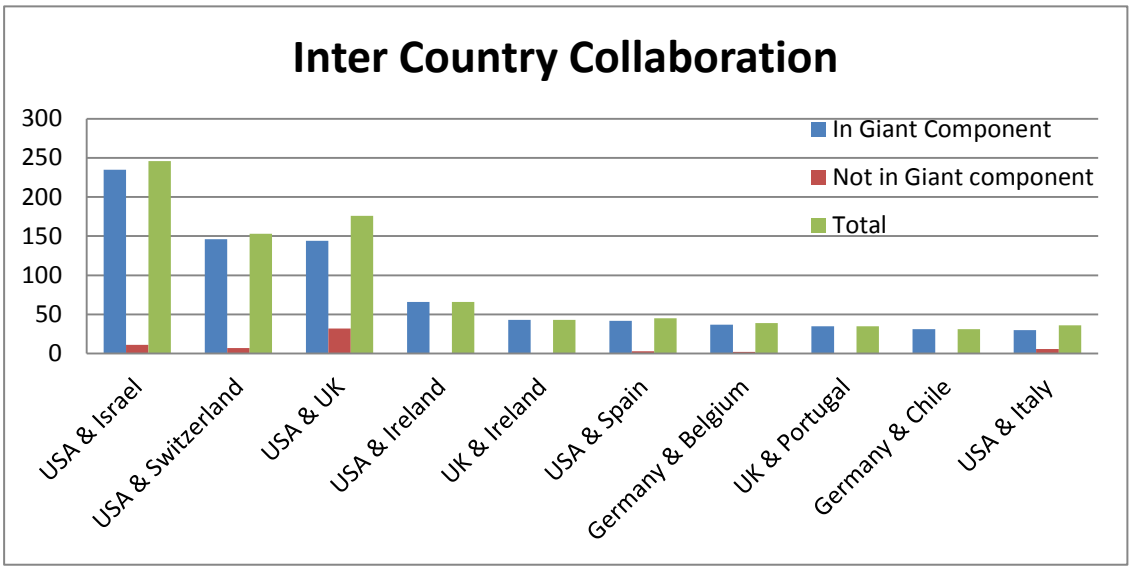

Figure 9: A bar graph representation of research collaboration between countries in the network. The Y-axis represents the number of inter-country collaboration and the X-axis represents the countries interacting.

The collaborative relationships that the countries in the sample had with each other are depicted above in table 8 and figure 9 respectively. The data shows that USA & Israel and USA & Switzerland had the highest collaborations between them in the giant component, out of the giant component and in the network. While other countries such as Germany & Chile and USA & Italy had relatively high collaboration between them but not the highest when compared to other inter-country collaboration. The level of inter-country collaboration was different and unique for many pairs across collaborations in the giant component, out of the giant component and in the network. Most of these countries with high levels of inter-country collaboration belong to the WEIRD category, suggesting high levels of collaboration between WEIRD countries.

There were also some countries that had very low levels of collaboration in the giant component, out of the giant component and in the network. These are countries such as Germany & Spain, Germany & Turkey, Germany & Switzerland, Spain & Ireland, Netherland & Turkey, Netherland & Switzerland, Netherland & South Africa, Turkey & Poland, Australia & Denmark, Australia & Belgium. These countries with low inter-country collaboration some belong to the WEIRD category and some to the non-WEIRD category. This suggests that there is a low collaboration between countries that belong to WEIRD and non-WEIRD categories. There is no evidence of inter-country collaboration between non-WEIRD countries that was found, however, the only available case of non-WEIRD countries' collaboration was found within country collaboration but not in inter-country collaboration.

4.3. Research Collaboration between WEIRD and non-WEIRD Category

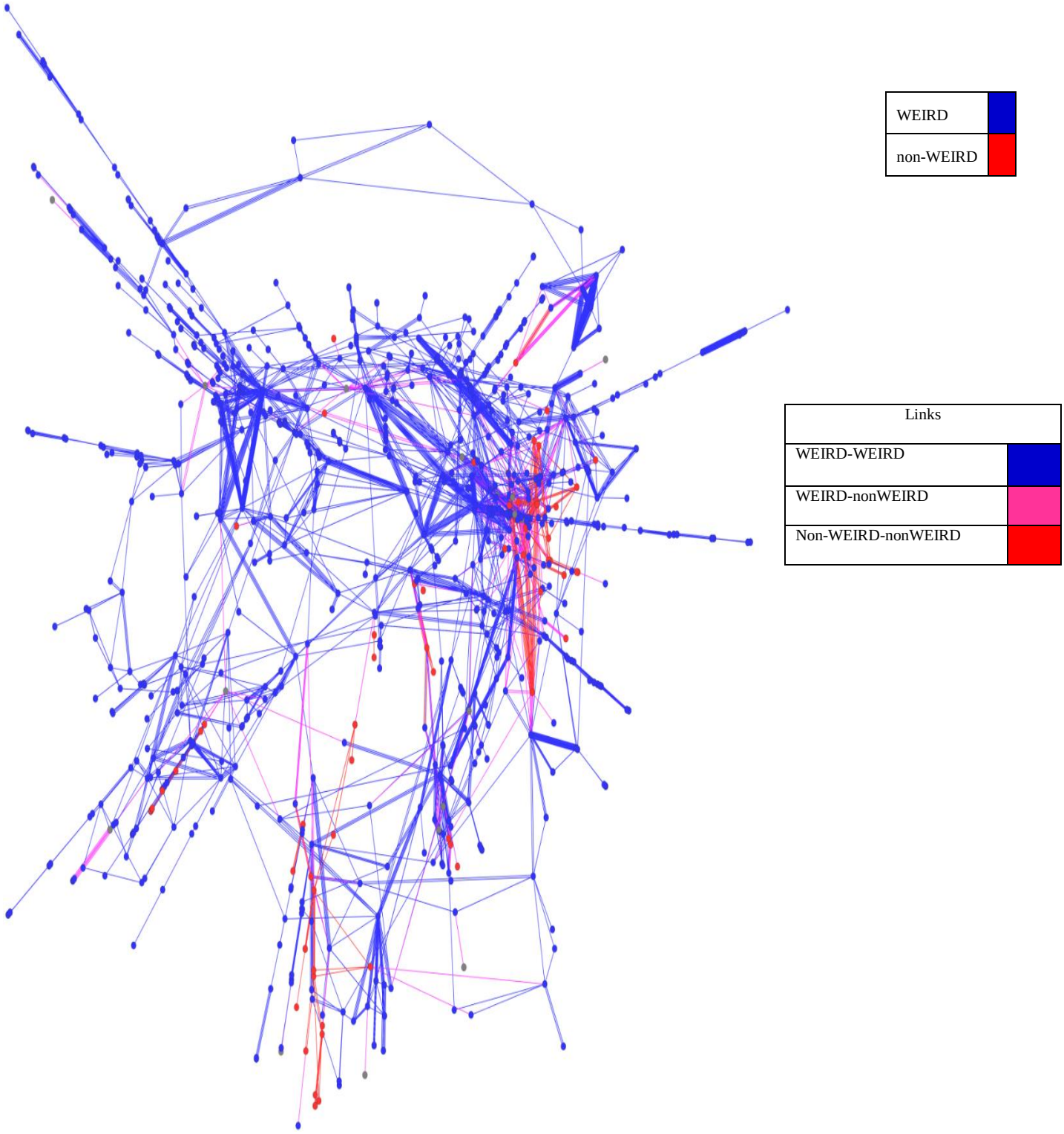

Figure 10: A representation of WEIRD and non-WEIRD categories in the giant component.

Figure 10 above illustrates the collaborative relationships that WEIRD (blue nodes; N = 1275; 89.1%) and non-WEIRD (red nodes; N = 131; 9.1%) authors have in the giant cluster. The blue links represent the collaborative relationship WEIRD nodes have with each other. The red links represent the relationship non-WEIRD nodes have with each other. The pink links represent the heterogeneous relationships between WEIRD and non-WEIRD authors. From the links in the visualisation, it is clear that the WEIRD category has more within-group collaboration than the non-WEIRD category, which is uncommon in the network. The inter-collaboration between WEIRD and non-WEIRD authors is very limited. Refer to appendix B for a visualisation of the whole network and how the WEIRD and non-WEIRD category interacts with each other.

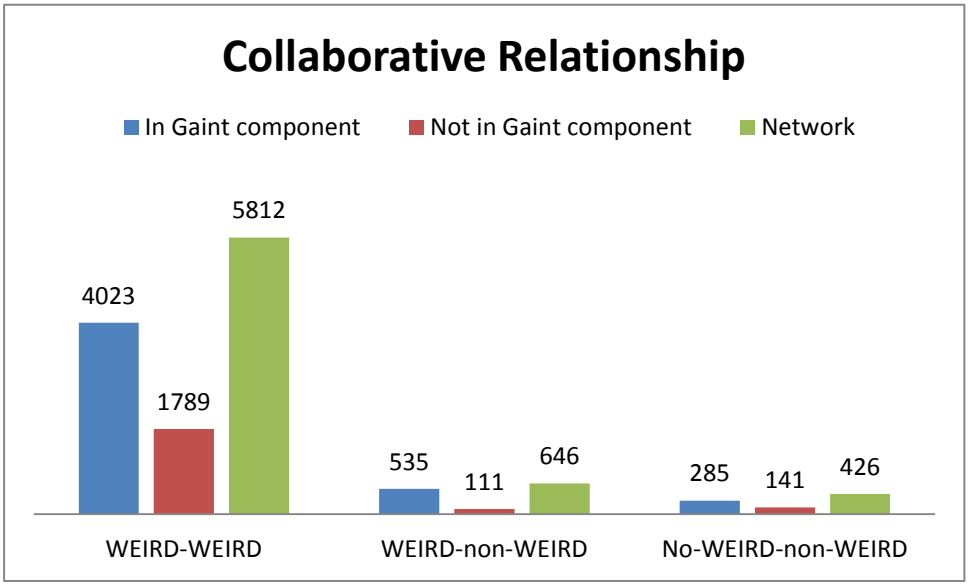

Figure 11: A bar graph illustrating the collaborative relationship between WEIRD and non-WEIRD. The numbers on the top of the bar graph represent the number of co-authored papers and the X-axis represent the category of WEIRD and non-WEIRD.

Figure 11 above represents the relationship between WEIRD and WEIRD; non-WEIRD and non-WEIRD; and WEIRD and non-WEIRD authors in the network. There were 5812 (69.9%) links between WEIRD and WEIRD authors in the network and 4023 (84.3%) in the giant component; 426 (6.1%) links between non-WEIRD and non-WEIRD authors in the

network and 285 (5.8%) in the giant cluster; and 646 (9.3%) links between WEIRD and non-WEIRD authors in the network and 535 (11.0%) in the giant component.

A Chi-square was run to check the authors' significance of association in inter-collaboration between WEIRD and non-WEIRD authors. A significant association between WEIRD and non-WEIRD authors in the giant component was found, χ^2 (2) =54.134, $p < .001$. This suggests that there is a collaborative relationship between WEIRD and non-WEIRD authors in the giant component. This suggests that in the giant component there are interactions between WEIRD and non-WEIRD authors.

4.3.1. Research collaboration by geo-political region

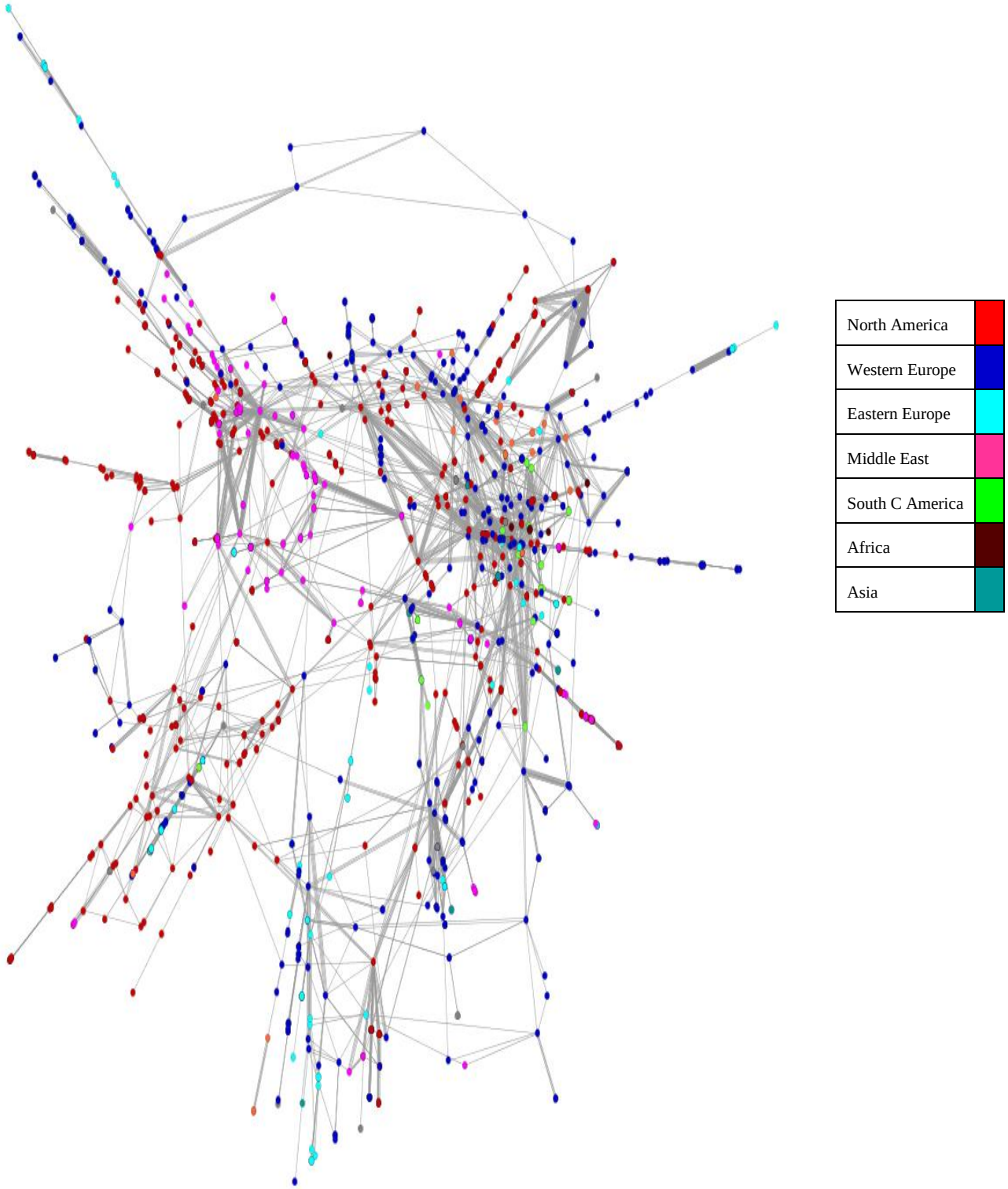

Figure 12: Representation of geo-political regions in the giant component with multiple authors

Figure 12 above shows a visualisation of geo-political regions in the giant cluster and their interactions with each other in terms of research collaboration. The colour codes that are dominant in the giant component belong to theses geo-political regions: North America, Western Europe, and the Middle East. The colour codes in the giant component that are not dominant belong to geo-political regions such as Eastern Europe, Australasia, Africa and Asia. Colour code domination suggests that those geo-political regions have high collaborations, whilst those with less colour code domination suggest a low collaboration.

4.3.2. Collaboration within-geo-political region

The table below shows research collaboration within geo-political regions, in the network and in the giant component.

Table 9: A tabulation of collaboration frequency in geo-political regions

Geo-political region	In Giant Component	Not in Giant Component	Network Total
North America (NA)	1409(65.7%)	735 (34.3%)	2144
Western Europe (WE)	1267(62.4%)	762 (37.6%)	2029
Middle East (ME)	331 (78.6%)	90 (21.4%)	421
South Central America (SCA)	173 (76.2%)	54 (23.8%)	227
Eastern Europe (EE)	116 (58.3%)	83 (41.7%)	199
Australasia (AA)	42 (50%)	42 (50%)	84
Africa (AF)	28 (82.4%)	6 (17.6%)	34
Asia (AS)	8 (38.1%)	13 (61.9%)	21
Total	3374 (65.4%)	1785 (34.6%)	5159

Table 9 above depicts links within geo-political region collaboration in the giant component, not in the giant component and in the network. Geo-political regions such as North America and Western Europe had high levels of within geo-political region collaboration in the giant

component, out of the giant component and in the network. While geo-political regions such Africa and Asia had low levels of within geo-political region collaboration. What is interesting is that most countries outside North America and Western Europe have a lower proportion of membership in the giant component with the exception of South Africa. The data suggest that geo-political regions that have most countries in the WEIRD category have a high level of within collaboration, for example, North America has countries that only belong in the WEIRD category. On the contrary, geo-political regions that have low levels of within collaboration have countries that belong to the non-WEIRD category.

4.3.3. Collaboration between geo-political regions

The table below shows research collaboration relationships between geo-political regions.

Table 10: Tabulation of collaboration frequency between geo-political regions

Geo-Political Region Combination	In Giant Component	Not in Giant Component	Network
North America & Western Europe	470 (83.3%)	94 (16.7%)	564
North America & Middle East	260 (94.2%)	16 (5.8%)	276
Western Europe & Eastern Europe	120 (91.6%)	11 (8.4%)	131
Western Europe & South Central America	89 (83.2%)	18 (16.8%)	107
Western Europe & Middle East	69 (81.2%)	16 (18.8%)	85
North America & Eastern Europe	52 (66.7%)	26 (33.3%)	78
Western Europe & Australasia	44 (88%)	6 (12%)	50
North America & Asia	30 (75%)	10 (25%)	40
Western Europe & Asia	29 (87.9%)	4 (12.1%)	33
Western Europe & Africa	28 (96.6%)	1 (3.4%)	29
North America & Australasia	17 (70.8%)	7 (29.2%)	24
North America & South Central America	19 (86.4%)	3 (13.6%)	22
Australasia & South Central America	16 (100%)	0 (0%)	16
North America & Africa	13 (86.7%)	2 (13.3%)	15
Middle East & Australasia	4 (66.7%)	2 (33.3%)	6
Eastern Europe & Africa	5 (100%)	0 (0%)	5
Eastern Europe & Middle East	3 (60%)	2 (40%)	5
Eastern Europe & Asia	4 (100%)	0 (0%)	4
Eastern Europe & Australasia	1 (50%)	1 (50%)	2
Eastern Europe & South Central America	1 (100%)	0 (0%)	1
Middle East & Asia	1 (100%)	0 (0%)	1
Middle East & South Central America	1 (100%)	0 (0%)	1
Australasia & Africa	1 (100%)	0 (0%)	1
Middle East & Africa	0 (0%)	0 (0%)	0
Australasia & Asia	0 (0%)	0 (0%)	0
South Central America & Africa	0 (0%)	0 (0%)	0

Geo-Political Region Combination	In Giant Component	Not in Giant Component	Network
South Central America & Asia	0 (0%)	0 (0%)	0
Africa & Asia	0 (0%)	0 (0%)	0
Total: 28	1276 (85.4%)	219 (14.6%)	1495

Table 10 above shows inter-geo-political region collaborations in the giant component, out of the giant component and network with geo-political regions such as North America & Western Europe and North America and Middle East with the highest collaborations between them. While geo-political such as South Central America & Africa and Africa and Asia had fewer collaborations between them. The collaborations patterns between these geo-political regions suggest that geographical proximity does not count when it comes to research collaboration. This is illustrated by the data because South Central America had substantially more collaboration with Europe than with North America. Possibly the most interesting feature of Table 10 are the geo-political regions that have few or no links/collaborations between them, like the Middle East & Africa; Australasia and Asia; South Central America & Africa; South Central America & Asia; and Africa & Asia.

4.4. Increase or decrease in research collaboration index over the years

One aim of this research was to investigate internationalization in research collaboration. Therefore exploring whether collaboration index is increasing or decreasing is very important in research collaboration.

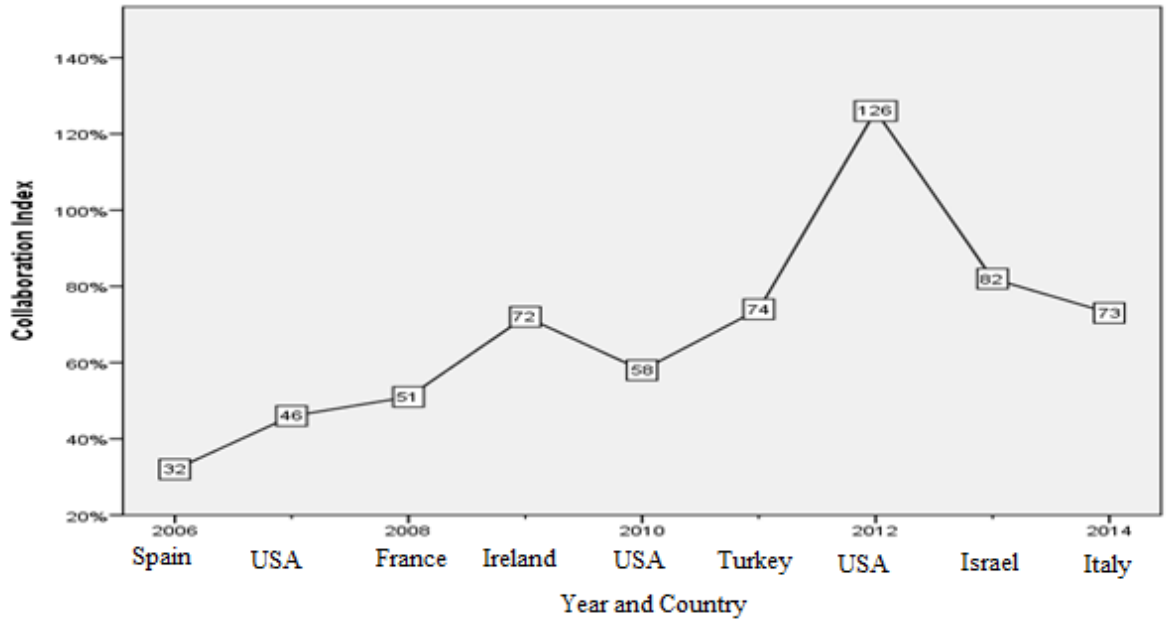

Figure 13: Line graph illustrating increase and decrease in research collaboration index over the period of 8 years in the ISPP
Note. Country names refer to the meeting venues.

Figure 13 above shows collaboration index (which was the number of collaborations in a year divided by the number of participants in the same year) over the period of 8 years in the ISPP. In 2006 the collaboration index was 32 suggesting less collaboration in the conference considering the number of participants, however, in 2012, the collaboration index was 126 suggesting more collaboration in relation to the number of participants. From the figure, it is evident that from 2006-2009 research collaboration increased based on the number of representation of each annual conference. The data shows that, apart from a slight dip in 2010, research collaboration increased steadily until 2012. However, from 2012-2014 the research collaboration index decreased from the 2012 peak.

4.5. Metrics analysis

4.5.1. Distance analysis

As discussed before in chapter 4 section 4.1.3 node distance refers to the number of hops a node has to travel to the nearest node. Node distance determines the strength and ability to initiate a relationship in a network. The distance that was calculated in this research was node distance between non-WEIRD to WEIRD Authors.

The non-WEIRD authors had between 1-8 hops/ jumps before they reach the WEIRD authors in the network with a mean of 2.7, median of 3.0, SD=1.269 and a range of 7. To test whether WEIRD authors were more likely to be closer to fellow WEIRD authors compared to non-WEIRD authors, an independent sample t-test was run in SPSS, where the dependent variable was the tie distance to non-WEIRD and independent variables were WEIRD and non-WEIRD authors; where no path existed at all distance was coded as missing and 2985 missing values were coded.

There was no significant difference in distance to non-WEIRD, (M=2.69, SD=1.238) with WEIRD authors and (M=2.82, SD=1.434) non-WEIRD authors; *t* (192.291) = -1.143, *p=.225.* Levene's test of equal variance was significant (*F*= 4.225, *p*= 0.40), suggesting that equal variance between WEIRD and non-WEIRD authors was violated. Therefore a non-parametric test was conducted. Mann-Witney U test was not significant U(83540)=, Z= -705, *p*.481. The distribution of distance to non-WEIRD is the same across categories of WEIRD and non-WEIRD

Table 11: Number of hops it takes for WEIRD authors to reach other WEIRD authors

WEIRD authors	Hops to WEIRD Author
192	1 (4.5%)
444	2 (10.5%)
360	3 (8.5%)
171	4 (4.0%)
62	5 (1.5%)
33	6 (0.8%)
10	7(0.2%)
3	8 (0.1%)

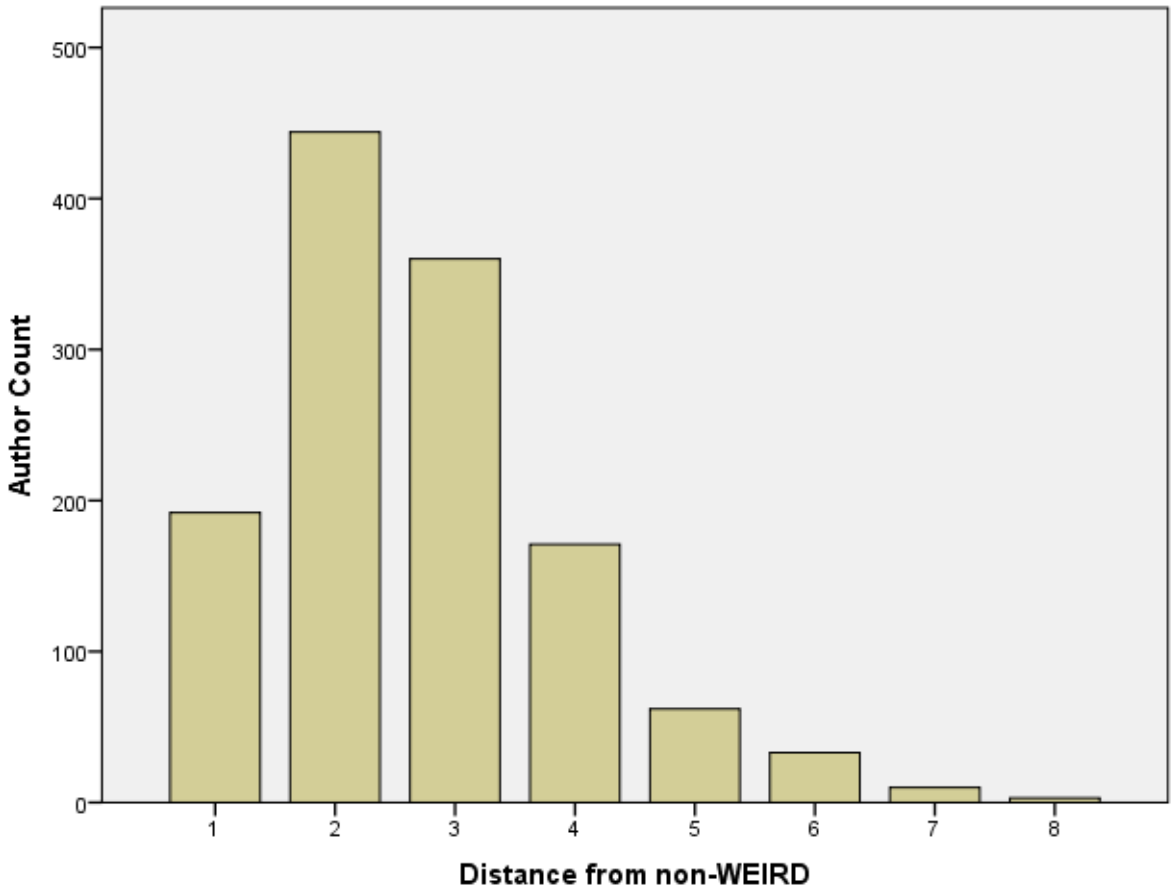

Figure 14: Bar graph illustrating the number of counts it takes for non-WEIRD authors to reach WEIRD authors.

Figure 14 and table 11 illustrates the number of hops it takes for non-WEIRD authors to reach WEIRD authors (see figure 3 in chapter 4 for a graphical illustration of tie distance). The data indicates that there is not a lot of authors who have one hop to connect to the next WEIRD author. The data also indicate that many WEIRD authors are connected to other WEIRD authors by at least 2-3 hops in the network. While the majority of the authors are connected by 5-8 hops.

Geo-political region Distance

Table 12: Geo-political region's to other geo-political regions distance means and standard deviations

Geo-political region	Mean	Standard Deviation
North America	1.30	1.280
Western Europe	1.35	1.332
Middle East	2.63	1.470
Eastern Europe	2.96	1.450
Australasia	3.55	1.518
South Central America	3.94	1.639
Africa	4.06	1.56
Asia	4.10	1.584

On average North America and Western Europe had less distance to travel to be linked to other geo-political regions compared to the other geo-political regions in the network. Middle East and Eastern Europe had less distance to travel to be linked to other geo-political regions compared to the other geo-political regions in the network. Australasia and South Central America had lesser distance to travel to be linked to other geo-political regions compared to Africa and Asia. Africa and Asia on average had more distance to travel to be linked to other geo-political regions compared to the other geo-political regions.

4.6. Centrality Analysis

The centrality analysis was mainly focused on the relationships between nodes (authors) from WEIRD and non-WEIRD countries. Degree centrality, betweenness centrality, and closeness centrality will be discussed below.

4.6.1. Degree centrality

As discussed in chapter 4, section 4.1.3., degree centrality is measured by the number of ties a node (author) has in a network. When a node (author) has many ties connecting to it with other nodes, the node with the many ties/links has the highest degree centrality. In co-

authorship analysis, authors with the highest degree are those with the highest number of collaborative relationships in the network.

An independent sample t-test was run in SPSS, where WEIRD/ non-WEIRD category was treated as the independent variable and degree centrality was treated as a dependent variable. Levine's test for equality of variance for degree centrality was not significant (F=2.67, p= .102) this suggests that there is equal variance between WEIRD and non-WEIRD authors in degree centrality. There is a significant difference in degree centrality between WEIRD (M=3.33, SD= 6.76) and (M= 2.48, SD= 5.66) non-WEIRD authors t (4188) = 2.73, p=.006. Indicating that there is a significant difference in degree centrality between WEIRD and non-WEIRD authors, with WEIRD authors having more connections per author than non-WEIRD authors.

4.6.2. Betweenness centrality

As discussed in chapter 4, section 4.1.3., nodes with high levels of betweenness play are important roles in networks since they connect different clusters, act as conduits for network resources such as information, and facilitate connections between nodes that would otherwise be more distantly linked (if at all).

An independent sample t-test was run in SPSS, where WEIRD/ non-WEIRD category was treated as the independent variable and betweenness centrality was treated as a dependent variable. Levine's test for equality of variance for degree centrality was not significant (F= .250, p=.617), this suggests that there is equal variance between WEIRD and non-WEIRD authors in betweenness centrality. There is no significant difference in betweenness centrality between WEIRD (M= 2496.66, SD= 16776.110) and non-WEIRD (M= 2766.24, SD= 19346.945) authors; t (4188) = -.336, p= .737. Indicating that there is no significant difference in betweenness centrality between WEIRD and non-WEIRD authors.

4.6.3. Closeness centrality

As discussed in chapter 4, section 4.1.3., closeness centrality as the name suggests indicates the average shortest path between a node (author) and every other node (authors) in the network. Closeness centrality in co-authorship analysis indicates the density of research collaboration in the network, with high average closeness indicating dense networks where

every author can access every other author through only a few jumps through their collaborators.

An independent sample t-test was run in SPSS, where WEIRD/ non-WEIRD category was treated as the independent variable and closeness centrality was treated as a dependent variable. Levine's test for equality of variance for degree centrality was not significant (F= .29, p= .585), this suggests that there is equal variance between WEIRD and non-WEIRD authors in closeness centrality. There is no significant difference in closeness centrality between WEIRD (M= 2590.74, SD= 17917.29) and non-WEIRD (M= .2406.13, SD= 10767.68) authors; t (4188) = .022, p= .819. This indicates that there is no significant difference between WEIRD and non-WEIRD authors in closeness centrality.

Chapter 5: Discussion

The aim of this research was to investigate patterns of internationalization in research collaboration with the International Society of Political Psychology (ISPP). This was achieved using bibliometric abstract journal data from the ISPP annual conferences from 2006-2014. The aims of the ISPP is to establish a community of scholars from all departments, in universities, governments and elsewhere, who are interested in research and the practical application of political psychology (ISPP, 2015). Also to monitor research communication among members and also other parties interested in collaboration in research. This is to ensure that the members and other parties have the freedom to publish their research. The ISPP is considered an international organization with members and non-members from different parts of the world, which aids research internationalization in the organization.

Understanding social structures in academic collaboration is very important; because research collaboration takes place in a social environment. Most of the literature in psychology today comes from western countries and is being used in non-western countries. However, there are organizations such as the ISPP who focus on research collaboration on the discipline of psychology and political science, whose main focus is research collaboration of authors from different countries, western or non-western (ISPP, 2015). This suggests that the ISPP might produce knowledge that could be the combination of western and non-western. Thus the psychology literature that will be produced will be both western and non-western. Therefore, this study is important in the discipline of psychology, since there is a possibility of knowledge production that is the combination of western and non-western literature.

According to Katz and Martin (1997), co-authorship networks reveal patterns of co-authorship relationships and how resources are distributed in research. In international research collaboration, the countries that are at the core, who have access to resources are the ones dominating in research and the countries at the periphery are less represented (Hwang, 2008; Arnette, 2008). Thus research collaboration at the international level is dominated by well resourced ‘developed’ countries at the centre and with under-resourced developing countries at the periphery being less involved in international research collaboration. There are many barriers that prevent international research collaboration between developed and

developing countries, including, funds, resources, equipment, access to knowledge, geographical boundaries, culture, areas of study and much more. The present study used the distinction between WEIRD and non-WEIRD as a proxy for Katz and Martin's core/periphery distinction because the literature suggests that most of the literature in psychology comes from WEIRD countries and less literature from non-WEIRD countries (Arnette, 2008; Henrich et al., 2010). Moreover, the literature that is published by WEIRD countries is considered universally applicable to non-WEIRD countries also (Henrich, 2010) but not *vice versa*.

Internationalization in research collaboration in the ISPP was assessed on three levels using van den Besselaar et al.'s, (2012) levels of internationalization in research collaboration between countries: (1) authors from different countries being represented, (2), authors from developed and developing countries being represented and (3), authors from developed and developing countries collaborating with each other without inequalities between these groups. The WEIRD category is a description by Henrich et al., (2010) referring to Western, Educated, Industrialised, Rich and Democratic countries. It is useful to distinguish between research from WEIRD countries and countries that do not fall neatly into this category, as Henrich et al. showed (a) that the vast majority of research in psychology is completed with researchers and participants in WEIRD countries only, leaving non-WEIRD ideas and responses unrepresented in the literature; and (b) that participants in non-WEIRD countries respond quite differently on many dimensions. The assumed 'universality' of psychological research is implausible when researchers and samples are so culturally homogenous.

To some extent the findings of this research corroborate with the literature reviewed; that research collaboration and internationalization in research occurs in many forms and understood differently by different scholars. Also, research suggests that the past decade international research has increased, however other scholars argue that researchers from developing countries are not part of the international community, it is mostly scholars from developing countries collaborating with each other. Therefore is an organization such as the ISPP that claims internationalization in research collaboration on the right track for internationalization in research collaboration. These questions about internationalization in research collaboration were addressed in the analysis, results and now will be extended in the discussion.

5.1. Basic Internationalization

5.1.1. Author representation in the ISPP

The findings of this research suggested that 74 countries (representing 37% of the world's countries) participated in the ISPP annual conferences from 2006-2014. However, out of the 74 countries, only a few contributed the bulk of papers in the conferences, with 61% of the authors from 5 countries. USA had the highest representation, followed by the UK with the rest of the countries that in the top 10 being countries from Western Europe. Developing countries had far less representation from. For example, South Africa had 38 (0.9%) authors and Taiwan had 5 (0.1%) authors.

There were 8 geo-political regions represented in the ISPP annual conferences. Most authors represented in the ISPP came from North America, which included 2 countries USA and Canada; Western Europe had 19 countries, the Middle East 6 countries. The other geo-political regions had very few authors represented in the network compared to the above mentioned geo-political regions. In those geo-political regions with few authors represented, there were geo-political regions like Eastern Europe and Asia where the few authors were spread across many countries, and other regions like Africa, Australasia, and South Central America where the few authors were nitrated rated in a few countries amongst them.

There were fewer countries that belonged to the WEIRD category and more countries that belonged to non-WEIRD category represented in the ISPP annual conferences. The WEIRD category had many authors represented, while the non-WEIRD category had few authors represented in the network of ISPP annual conferences.

These findings corroborate with van Halden's (2012) findings: that developing countries such as USA and the UK have more access to resources and as result of this; they have more opportunities to do research. Developing countries have fewer resources, which is why research for them is costly, thus few research is produced from these countries. But compounding the global geographic skew in research, the conference venue alternates between the North America and Europe, which makes for researchers from North America and Europe to present at the annual meetings than authors in the geographic periphery.

These findings also, corroborate findings by Arnette (2008) and Henrich et al., (2010) about literature that is published in psychology; they argued that USA has the highest psychology

publication compared to any other country in the world. The problem with USA having the highest publications in psychology is the issue of naively generalising their research to all the countries in the world when actually the research that is produced in USA cannot be assumed to be universally applicable to all the countries in the world. The findings also corroborate Quayle and Greer's (2014) findings that developing countries such as Egypt, India and other developing countries in the world have very limited research output in psychology. Certainly at ISPP conferences countries that belong to the WEIRD category had more authors, and those authors presented more papers with more co-authors compared to countries from the non-WEIRD category.

The WEIRD and non-WEIRD category findings of the results does not corroborate with other studies of the similar nature when it comes to representation of non-WEIRD authors, in networks. A Social Psychology study conducted by Quayle & Greer, (2014) suggest that authors from Africa are less represented in the international society, this was evident by other small European countries having more authors than Africa as a continent. Therefore compared to Quayle and Greer study, this study had more authors from non-western countries represented

5.1.2. Summary of Basic internationalization

Internationalization in research requires participation from all members of the organization, i.e collaboration from authors from different countries, geo-political regions and different categories. The results suggested that in the ISPP annual conferences authors belonging from developing and developed or WEIRD and non-WEIRD countries participated. It was evident that most authors came from WEIRD countries and less authors from non-WEIRD countries. There were also differences between WEIRD and non-WEIRD authors in terms of their research collaboration in the ISPP. Authors representing WEIRD countries had more within collaboration in their countries, geo-political region and WEIRD category. On the other hand, authors representing non-WEIRD countries had less within collaboration in their countries, geo-political regions and non-WEIRD category.

5.2. Depth of internalization

The aim of this research was to measure patterns of internationalization in research collaboration. The first type internationalization in research collaboration that will be discussed is internationalization between the 74 countries that were represented in the ISPP annual conference. The Second type of internalization is research internationalization between geo-political regions. The last type of internationalization is internationalization between WEIRD and non-WEIRD categories. The depth of internationalization focuses on the interactions between authors from different countries, geopolitical regions and WEIRD and non-WEIRD.

5.2.1. Inter-country, inter-geo-political and WEIRD or non-WEIRD category research collaboration

Not all the countries that participated in ISPP annual conferences had inter-country collaborations with other countries. USA and Israel had the highest co-authorship collaboration in the giant component and in the whole network. USA and Switzerland had the second highest collaboration in the giant component and ranked third in the whole network. USA and UK had the third highest collaboration in the giant component and ranked second in the whole network. The other countries with high inter-country collaboration were countries that collaborated with USA and UK in the network and they were from developed countries. There was very little co-authorship collaboration between developing and developed countries in the network; these were collaboration between USA, UK and South Africa, Russia. There was no evidence of co-authorship collaborations directly between developing countries in the network.

Co-authorship collaboration between geo-political regions turned out to be high between few geo-political regions in the network and other geo-political regions with no co-authorship collaboration between them in network. North America & Western Europe both geo-political regions with countries belonging to the WEIRD category had the highest inter geo-political regions collaboration between them. While geo-political regions such as Western Europe & Eastern Europe had less collaborations between them, interestingly these geo-political regions are close to each other in term of geographical proximity and they are comprised of countries belonging to WEIRD and non-WEIRD countries. Moreover, geo-political regions

that comprised of non-WEIRD countries had no collaborations between them, for example, there is no collaboration between South Central America and Africa

The co-authorship collaboration between WEIRD countries and non-WEIRD countries was low in both the giant component and the network. The findings of this research corroborate with Hwang's (2008) findings; there is less collaboration between WEIRD and non-WEIRD in international research collaboration. According to Hwang, non-WEIRD countries are likely to try to establish collaborative relationships with WEIRD countries, because WEIRD countries have resources and skills to conduct and produce valuable research (also Wagner & Leydesdorff, 2005, Sherren et al., 2009; Gazni et al, 2012).

The pattern observed in ISPP collaborations matches the core-periphery model observed by Hwang (2008) and Leydesdorff and Wagner (2008). The Core-periphery model suggests that when it comes to knowledge production; the core countries are the producers of knowledge and the countries, geo-political regions, which are at the non-WEIRD are receptors of the knowledge produced at the core (Acosta et al., 2010; Schubert and Sooryamoorthy 2010). The results also show less integration of the non-WEIRD countries, and geopolitical regions in the ISPP academic network. The findings of this research suggest that this theory may also applicable to researchers in the ISPP; with the WEIRD countries and less co-authorship collaboration between WEIRD and non-WEIRD countries.

The results suggest that there was no co-authorship collaboration between developing countries or non-WEIRD. This corroborates with Quayle and Greer's (2014), results, which suggests that there are less collaborative relationships between authors from Africa; Africa as a geo-political region with countries that are underdeveloped and developing countries. The findings of this research suggest that Quayle and Greer's (2014), findings could be applicable to other countries that are not from Africa since all developing countries in the ISPP network had less evident co-authorship collaboration between them.

The trend in this research corroborated with Hoekman et al., (2010), who argued that geographical location plays an important role in research collaboration and researchers that are close to each other are more likely to collaborate with each other, than researchers that are apart from each other. The results suggest that WEIRD and non-WEIRD countries and geo-political regions that are not in close proximity have few collaborations between them. However, WEIRD and non-WEIRD countries and geo-political regions that are closer to each other had more inter-collaborations between them.

5.2.2. Summary of depth internationalization

There is a high collaboration between countries that belong to developing countries, whereas there were low rates of collaboration between developed and developing countries and there was no collaboration between countries from developing and under-developed nations. The trend was similar with collaboration between geo-political regions. More collaborative patterns between geo-political regions that were composed of developed countries. There were also low rates of collaboration between geo-political regions that composed of both developed and developing countries. There was no evidence of collaboration between geo-political regions that composed of countries belonging from developing countries. There was high levels of collaboration between WEIRD category, very few collaborations between WEIRD and non-WEIRD categorise, and no evidence collaboration between countries in the non-WEIRD category. Suggesting that non-WEIRD authors' collaboration is limited and mediated by WEIRD author's connection in the network and that knowledge production in political psychology mostly relies on WEIRD authors.

These results indicate that organizations that aim to promote 'internationalization' in research need to carefully consider the reasons for such collaboration and carefully consider the types of internationalization that they will be or hoping to achieve. Collaboration of countries in the same category is different in nature to collaboration between WEIRD and non-WEIRD countries.

5.3. Collaborative interactions

Internationalization in research collaboration in the ISPP was also assessed by the interaction WEIRD and non-WEIRD authors. Constructs such as distance between authors, centrality and collaboration over the period of 8 years in the ISPP will be discussed.

5.3.1. Distance

Tie distance was one of the methods used to measure internationalization, which was determined by the number of hops it takes to reach the nearest hop from different geo-political regions and distance between WEIRD and non-WEIRD authors.

When including the distance for all the geo-political regions in the network. On average North America and Western Europe was 1 tie away from all the other geo-political regions. On average Middle East and Eastern Europe were 2 ties away from the other geo-political region. On average Australasia and South Central America were 3 ties away from the other geo-political regions. Lastly Africa and Asia on average were 4 ties away from the other geo-political regions. North America and Western Europe had less hops to travel in order to reach the other geo-political regions. Africa and Asia had to travel many hops to reach the other geo-political regions.

On average non-WEIRD authors had to travel 2 ties to reach the nearest WEIRD author in the network. The distance non-WEIRD authors had to travel to the nearest WEIRD author was not significant in the network. These statistical findings confirm the network visualisation of patterns of co-authorship connectivity between WEIRD and non-WEIRD authors in the network.

These findings corroborate Krethmers's (2004), findings that in co-authorship networks, the countries that are in the core of the network have less distance in the network to travel to the other authors that are also at the core and more distance to authors that are on the periphery. The findings of this research suggests that WEIRD geo-political regions such as North America and Western Europe had the highest collaborations in the giant cluster which suggests that they have less distance to travel to reach the other authors from different geo-political regions that are also in the giant component. Authors that are not in the giant cluster had more distance to travel to authors that are in the giant cluster. Non-WEIRD geopolitical regions such as Africa and Asia authors' had more distance to travel in the giant cluster since most of its collaborations were out of the giant cluster.

This can also be explained by Hwang's (2008), findings, which state that research collaboration output favours countries at the core because they have resources. The findings indicate that North America and Western Europe are WEIRD geo-political regions that have resources; therefore there is high co-authorship collaboration between them. Non-WEIRD geo-political regions such as Africa, Asia, and South Central America have fewer resources; therefore the research output will be low and also less co-authorship collaborations with WEIRD geo-political regions like North America in the giant component.

5.3.2. Centrality

In this research, centrality was measured between WEIRD and non-WEIRD authors using three different types of centrality, namely: degree centrality, betweenness centrality and closeness centrality.

The analysis of degree centrality between WEIRD and non-WEIRD authors in the network suggest that there was a significant difference in degree between WEIRD and non-WEIRD authors in the giant component. In other words, authors from WEIRD countries are likely to have more collaborations with one another, than with authors from non-WEIRD countries in the giant component.

The betweenness centrality between WEIRD and non-WEIRD authors in the network suggest that there was no significant difference in betweenness between WEIRD and non-WEIRD authors in the in the giant component. These results suggest that WEIRD and non-WEIRD authors equally important in connecting the overall network together. Although non-WEIRD authors are peripheral in some ways and have fewer collaborators, they are no less likely to play an important role in connecting the overall network together.

The analysis of closeness centrality between WEIRD and non-WEIRD authors in the network suggest that there was no significant difference in closeness centrality between WEIRD and non-WEIRD authors in the network. These findings suggest that WEIRD and non-WEIRD in the giant component have a similar average closeness to other WEIRD and non-WEIRD authors.

The centrality findings in this research were expected, given that Kretschmer's (2004) suggested that the giant component generally has many connections between the authors that are included in it. This then means that WEIRD and non-WEIRD authors had equal opportunities of collaboration in the giant component. Suggesting that WEIRD and non-WEIRD had the same probability of being in the giant component and interacting with both WEIRD and non-WEIRD author. However, degree centrality suggests a difference between WEIRD and non-WEIRD authors, with WEIRD authors having more opportunities for collaboration than non-WEIRD authors.

5.4. Collaboration over the years

The aim of this research was to map pattern of internationalization in research collaboration in the ISPP.

Results show that WEIRD and non-WEIRD research collaboration index in the ISPP has shown that collaboration in the ISPP has not been stable. The data indicates that from 2006 the percentage of collaboration index was low and steadily increased from 2006-2009, but decreased again from 2009-2010. This data show that despite the drop-off from the 2009 peak, research collaboration seems to be slowly increasing in ISPP conferences. This corroborates findings that research collaboration is slowly increasing between countries, universities and organizations (Gazni et al, 2012; Hoekman et al., 2010; Boshoff, 2010).

In as much as collaboration index showed improvement during the 8 year period in the ISPP, it doesn't mean that internationalization in research collaboration increased. The data indicated that WEIRD authors have very high representation within collaborations in the network compared to non-WEIRD authors with low representation within the network and also very low rates of collaboration between WEIRD and non-WEIRD countries in the network. These collaborative patterns can be explained by the core and periphery theory or the WEIRD and non-WEIRD descriptions. The WEIRD authors are at the core, which puts them in a good position for research collaboration with other authors that are WEIRD. The non-WEIRD nations are at the periphery with fewer resources, thus having less research outputs. These suggest that internationalization is not yet full reached in the ISPP since there are unequal collaborations in WEIRD and non-WEIRD authors. Moreover, collaboration between WEIRD and non-WEIRD authors is very low, which suggest that the full extent of internationalization has not been yet reached in the ISPP. According to Van Den Besselaar et al., (2012) internationalization in research is when authors from both developed and developing countries can equally collaborate in research. The results however show an unequal pattern of research collaboration between WEIRD and non-WEIRD countries.

In summary, the study indicates internationalization in research collaboration in the ISPP between countries, geo-political regions, and WEIRD and non-WEIRD categories of countries is not yet reached in the broader sense of the word "internationalization". The ISPP has reached collaboration between authors that mostly belong to the same country, geo-political region and WEIRD or non-WEIRD country category. The data showed that the ISPP

annual conferences are represented by a range of countries from both developed and developing countries. There is also evidence of high levels of inter-country collaboration between geo-political regions such as North America and Western Europe, also some evidence of inter-country collaboration between WEIRD and non-WEIRD countries. In as much as the many non-WEIRD countries were not well represented in the giant component, the ones that were part of the giant component were well connected with WEIRD countries.

5.5. Political Psychology

Erisen (2012), argues that political psychology is neither political science nor psychology, however, it is the understanding of general psychology and political processes. According to Erisen (2012) and Cottam (2015), political psychology brings about researchers from different disciples such as psychology, sociology, psychiatrist etc, who are interested in studying political concepts at an individual level. This means that political psychology is not just merely a study of political science and psychology, but an inclusion of different fields. "Political psychology originated in the study of leadership and mass political behaviour, and was later broadened to the study of intergroup relations, decision making, mass communication effects, political movements, and political mobilisation" (Erisen, 2012, p 9).

Political psychology is very important in modern day society researchers since it aims at understanding political process at an individual level to a group level (Cottam, 2015; Erisen, 2012). The world today is integrated in a way, what is done in other parts of the world affect other people in other parts of the world, therefore political psychology researchers help to understand the individual or group behaviours in a political context. This means that the field/discipline of psychology has expanded from understanding human behaviour, to understanding human behaviour in a social and political context. Moreover, researchers who are interested in studying political psychology can have the opportunity to collaborate with other researchers from different field, thus increasing collaborations between researchers from a different fields.

5.6. Limitations and recommendations

In this section the limitations that were encountered during the course of this research will be discussed, as well as recommendations of how to better conduct a research of this nature in the future will be discussed.

5.6.1. Limitations

5.6.1.1. Sample Frame

The sampling frame of this research was a problem since it only covered data from 2006-2014 from the ISPP annual conference. The annual conference of the ISPP suggests that if authors are not part of the conference their publications will not be listed. This means that authors that published in political psychology and are members of the ISPP, however not taking part in the conferences will automatically be excluded in the sample and not part of the analysis. The conferences might not have included all countries that are part of the ISPP, which makes it difficult to gain access to all the countries that are part of the ISPP. The Time frame for the conferences was also a problem; measuring a concept that is sophisticated such as internationalization in research collaboration is something that will take many years for internationalization to be reached fully. 8 years was a very short time to measure internationalization.

It is recommended that future studies to use a sample frame that will be not limiting in terms of all the members that are part of the ISPP and they have published under the journal of political psychology. Therefore using both the ISPP annual conference abstract journal and journal data base that has all publications of political psychology access to enhance the sample and create better opportunities to study internationalization. In addition, using a longer time frame to study internationalization in research collaboration can be useful, because it will provide the researcher with more data to work with and show true collaborative relationships between WEIRD and non-WEIRD authors.

5.6.1.2. Author name disambiguation

The ISPP annual conferences had authors that participated in all the conferences; some with multiple publications in each conference. This created a problem because there was inconsistency in the record of names used in the abstract journal which resulted in author homonymy; because there were common first names, last names, Initials, listing the same author in different formats. The journal abstract was inconsistent of keeping similar author records over time, sometimes they would use the full names of author, single initials, multiple initials, this made it difficult to identify if it is just one author or multiple authors. A choice

had to be made in this research of whether to use full names and surname; treating authors with a similar surname but with initials as a different author. However, university of affiliation was used to determine whether two entries with the same name were the same author. To obtain better results from the sample duplicates had to be deleted for more comprehensive output. It is recommended that future studies on a similar topic or in bibliometric studies, to use both formats of the names in the journal and delete duplicates. The ISPP abstracts did not include country information of the author, the country had to be searched through the institution that the author belonged too. However, institutions were not always linked to a country and sometimes institutions were not included in the abstracts.

Chapter 6: Conclusion

The research presented set out to explore the level of research internationalization that exists within the International Society for Political Psychology, with a specific focus on the society's annual meetings. The findings of this study could only be generalised to ISPP itself, with reference to the existence of international research collaboration in the society. However, the findings are suggestive of broader patterns in academia, specifically in the field of political psychology and political science. As indicated in the literature review, this study also pointed out to a number of issues associated with international research collaboration. The analysis demonstrated that there are gaps in an international collaboration between developed/WEIRD and developing/non-WEIRD countries. Developed countries have the resources to conduct research and as a result, they have many research outputs, whilst developing countries have fewer resources to conduct research, resulting in less research output. Therefore in investigating internationalization in research collaboration, three types of internationalization were considered and explored: first, internationalization that was determined by collaboration between authors affiliated with different countries. Secondly, internationalization that was determined by collaboration between countries associated with different geo-political regions. Lastly, internationalization determined by research collaboration between authors that were associated with WEIRD and non-WEIRD countries.

The results indicated that research collaboration between authors from different countries is common but unevenly distributed between participating countries. This collaboration between authors from different countries is low; however, countries such as the USA, Israel, and UK had the high inter-country collaboration (these countries belonged to the WEIRD category). These countries also had high within country collaboration, suggesting that they (WEIRD countries) dominate the ISPP in terms of research publications, within country collaboration and high inter-country collaboration.

The results of the analysis on internationalization between geo-political regions indicated high levels of collaboration existed within North America and Western Europe regions, and the other geo-political regions had much lower collaboration. The results proved that geo-political regions like North America and Western Europe had the highest collaborations between them, whilst North America and the Middle East had the second highest collaboration. This indicated that there was less collaboration between geo-political regions

in the network since few geo-political regions collaborated. These results were supported by the tie distance between the geo-political regions. For example, geo-political regions such as North America and Western Europe had less distance to travel to the nearest authors of different geo-political regions, whereas other regions whose tie distance was longer had less inter-geo-political region collaboration because their authors had a further distance to travel to the nearest authors for collaboration to take place.

Findings on internationalization in research collaboration between WEIRD and non-WEIRD authors in this study showed that there was a high level of collaboration among WEIRD authors by themselves, whilst the non-WEIRD authors had a low level of collaboration on their own. The results also proved that there are relatively few collaborations between WEIRD and non-WEIRD authors. Some non-WEIRD authors who presented at the conference were connected to the WEIRD category in the giant component, thus suggesting a collaboration between WEIRD and non-WEIRD authors. Non-WEIRD authors included in the giant component were relatively well embedded in it, with the average WEIRD author only having to traverse 2 ties to reach non-WEIRD authors.

The measure of centrality analysed indicated that closeness and betweenness centrality are not significantly different between WEIRD and non-WEIRD authors. Closeness and betweenness centrality suggest that authors from WEIRD and non-WEIRD have the same equal opportunities to collaborate with each other in the network. However, degree centrality indicated a significant difference between WEIRD and non-WEIRD authors in terms of connected in the giant component. This suggests that WEIRD authors have more direct collaborators but are not necessarily better connected in the network than non-WEIRD authors who nevertheless have fewer connections in the network.

In summary, the ISPP has not yet fully reached internationalization, which would require that all the authors from different countries, geopolitical regions, and WEIRD/non-WEIRD countries have an equal chance to collaborate with every author available. In the ISPP the trend is that developed countries collaborate with other developed countries or/and WEIRD authors are collaborating with other WEIRD authors. Most of the inter-country collaboration took place between WEIRD countries and minimal inter-country collaborations between WERD and non-WEIRD authors. In the ISPP Authors that belong to WEIRD countries have high collaboration with other authors from WEIRD countries and little collaboration with

authors from non-WEIRD countries. Furthermore, there was less evidence virtually or statistically of inter-country collaborations between authors that belong to non-WEIRD countries. Therefore the collaborative patterns that exist in the ISPP do not suggest true internationalization. This then implies that there is still a lot of work that needs to be done as far as research internationalization is concerned. Also, international research collaboration is still a goal that is yet to be achieved, researchers, governments, international research societies, still need to work hard for research internationalization to be a reality.

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Appendix: A:

Table of countries with geo-political region and category

Country	Geo-political region	Category	Frequency	%
USA	North America	WEIRD	1573	36.1%
UK	Western Europe	WEIRD	340	8.0 %
Israel	Middle East	WEIRD	306	7.2 %
Germany	Western Europe	WEIRD	262	6.2 %
Spain	Western Europe	WEIRD	189	4.4 %
Italy	Western Europe	WEIRD	168	4.0 %
Netherlands	Western Europe	WEIRD	119	2.8 %
Canada	North America	WEIRD	109	2.6 %
Turkey	Middle East	WEIRD	94	2.2 %
Australia	Australasia	WEIRD	77	1.8 %
Switzerland	Western Europe	WEIRD	75	1.8 %
Unknown Countries			70	1.6%
Poland	Eastern Europe	non- WEIRD	69	1.6 %
Russia	Eastern Europe	non- WEIRD	61	1.4 %
Sweden	Western Europe	WEIRD	61	1.4 %
Belgium	Eastern Europe	non- WEIRD	59	1.4 %
Portugal	Western Europe	WEIRD	55	1.3 %

Country	Geo-political region	Category	Frequency	%
Brazil	South Central America	non- WEIRD	46	1.1 %
Mexico	South Central America	non- WEIRD	42	1.0 %
South Africa	Africa	non- WEIRD	38	0.9 %
Ireland	Western Europe	WEIRD	34	0.8 %
Austria	Western Europe	WEIRD	31	0.7 %
Chile	South Central America	non- WEIRD	31	0.7 %
France	Western Europe	WEIRD	30	0.7 %
Argentina	South Central America	non- WEIRD	27	0.6 %
Greece	Western Europe	WEIRD	27	0.6 %
Denmark	Western Europe	WEIRD	23	0.5 %
Hungary	Eastern Europe	WEIRD	19	0.4 %
New Zealand	Australasia	WEIRD	19	0.4 %
India	Asia	non- WEIRD	16	0.4 %
Indonesia	Asia	non- WEIRD	13	0.3 %
Croatia	Eastern Europe	non- WEIRD	12	0.3 %
Norway	Western Europe	WEIRD	12	0.3 %
China	Asia	non- WEIRD	11	0.3%
Finland	Western Europe	WEIRD	11	0.3 %
Romania	Eastern Europe	non- WEIRD	11	0.3 %
Serbia	Eastern Europe	non- WEIRD	10	0.2 %
Japan	Asia	non- WEIRD	9	0.2 %

Country	Geo-political region	Category	Frequency	%
Iran	Middle East	non- WEIRD	7	0.2 %
Venezuela	South Central America	non- WEIRD	7	0.2 %
Lithuania	Western Europe	WEIRD	6	0.1 %
Scotland	Western Europe	WEIRD	6	0.1 %
South-Korea	Asia	non- WEIRD	6	0.1 %
Ukraine	Eastern Europe	WEIRD	6	0.1 %
Columbia	South Central America	non- WEIRD	5	0.1 %
Taiwan	Asia	WEIRD	5	0.1 %
Azerbaijan	Asia	non- WEIRD	4	0.1 %
Cyprus	Eastern Europe	non- WEIRD	4	0.1 %
Latvia	Eastern Europe	non- WEIRD	4	0.1 %
Nigeria	Africa	non- WEIRD	4	0.1 %
Czech Republic	Eastern Europe	non- WEIRD	3	0.1 %
Estonia	Eastern Europe	non- WEIRD	3	0.1 %
Malaysia	Asia	WEIRD	3	0.1 %
Bulgaria	Eastern Europe	non- WEIRD	2	0.0 %
Egypt	Africa	WEIRD	2	0.0 %
Guam	Australasia	non- WEIRD	2	0.0 %
Korea	Asia	non- WEIRD	2	0.0 %
Lebanon	Asia	non- WEIRD	2	0.0 %
Montenegro	Eastern Europe	non- WEIRD	2	0.0 %

Country	Geo-political region	Category	Frequency	%
Singapore	Asia	non- WEIRD	2	0.0 %
Slovakia	Eastern Europe	non- WEIRD	2	0.0 %
Cambodia	Asia	WEIRD	1	0.0 %
Costa Rica	South Central America	non- WEIRD	1	0.0 %
Georgia	Eastern Europe	WEIRD	1	0.0 %
Herzegovina	Eastern Europe	non- WEIRD	1	0.0 %
Iceland	Western Europe	non- WEIRD	1	0.0 %
Iraq	Middle East	non- WEIRD	1	0.0 %
Kyrgyzstan	Middle East	non- WEIRD	1	0.0 %
Macedonia	Eastern Europe	non- WEIRD	1	0.0 %
Malta	Western Europe	WEIRD	1	0.0 %
Philippines	Asia	non- WEIRD	1	0.0 %
Sarajevo	Eastern Europe	WEIRD	1	0.0 %
United Arab Emirates	Asia	non- WEIRD	1	0.0 %
Uzbekistan	Middle East	WEIRD	1	0.0 %
Vietnam	Asia	non- WEIRD	1	0.0 %
Total: 74	74	74	4262	100 %

Appendix A1:

Table: showing authors from co-authored papers

Countries	Frequency	Percent	Valid Percent	Cumulative Percent
Unknown	41	1.3	1.3	1.3
Argentina	18	.6	.6	1.9
Australia	60	1.9	1.9	3.8
Austria	24	.8	.8	4.6
Azerbaijan	3	.1	.1	4.7
Belgium	48	1.5	1.5	6.2
Brazil	27	.9	.9	7.1
Bulgaria	1	.0	.0	7.1
Cambodia	1	.0	.0	7.2
Canada	87	2.8	2.8	10.0
Chile	30	1.0	1.0	10.9
China	9	.3	.3	11.2
Columbia	4	.1	.1	11.4
Croatia	10	.3	.3	11.7
Cyprus	2	.1	.1	11.7
Czech-Republic	2	.1	.1	11.8
Denmark	13	.4	.4	12.2
Egypt	1	.0	.0	12.3
Estonia	1	.0	.0	12.3
Finland	3	.1	.1	12.4
France	20	.6	.6	13.0
Georgia	1	.0	.0	13.1
Germany	206	6.6	6.6	19.7
Greece	22	.7	.7	20.4
Guam	2	.1	.1	20.5
Hungary	13	.4	.4	20.9
Iceland	1	.0	.0	20.9
India	10	.3	.3	21.2
Indonesia	7	.2	.2	21.5
Iran	2	.1	.1	21.5
Ireland	25	.8	.8	22.3

Countries	Frequency	Percent	Valid Percent	Cumulative Percent
Israel	198	6.4	6.4	28.7
Italy	146	4.7	4.7	33.4
Japan	2	.1	.1	33.5
Korea	1	.0	.0	33.5
Latvia	2	.1	.1	33.5
Lebanon	2	.1	.1	33.6
Lithuania	5	.2	.2	33.8
Macedonia	1	.0	.0	33.8
Malta	1	.0	.0	33.8
Mexico	21	.7	.7	34.5
Netherlands	92	3.0	3.0	37.5
New-Zealand	9	.3	.3	37.8
Nigeria	4	.1	.1	37.9
Norway	8	.3	.3	38.1
Poland	55	1.8	1.8	39.9
Portugal	43	1.4	1.4	41.3
Romania	6	.2	.2	41.5
Russia	21	.7	.7	42.2
Sarajevo	1	.0	.0	42.2
Scotland	4	.1	.1	42.3
Serbia	10	.3	.3	42.7
Slovakia	2	.1	.1	42.7
South-Africa	20	.6	.6	43.4
South-Korea	5	.2	.2	43.5
Spain	150	4.8	4.8	48.3
Sweden	46	1.5	1.5	49.8
Switzerland	59	1.9	1.9	51.7
Taiwan	4	.1	.1	51.8
Turkey	70	2.3	2.3	54.1
UK	254	8.2	8.2	62.3
Ukraine	4	.1	.1	62.4
United-Arab-Emirates	1	.0	.0	62.4
USA	1164	37.4	37.4	99.9
Venezuela	3	.1	.1	100.0
Vietnam	1	.0	.0	100.0
Total	3109	100.0	100.0	

Appendix A2:

Table showing collaboration, within and between geo-political regions

Continent vs Geo-political region	Giant Component	Not in Giant Component	Total
North America (NA)	1409	735	2144
Western Europe (WE)	1267	762	2029
Eastern Europe (EE)	116	83	199
Middle East (ME)	331	90	421
Australasia (AA)	42	42	84
South Central America (SCA)	173	54	227
Africa (AF)	28	6	34
Asia (AS)	8	13	21
NA & AF	13	2	15
NA & AS	30	10	40
NA & AA	17	7	24
NA & EE	52	26	78
NA & SCA	19	3	22
NA & WE	470	94	564
NA & ME	260	16	276
WE & AF	28	1	29
WE & AS	29	4	33
WE & EE	120	11	131

Continent vs Geo-political region	Giant Component	Not in Giant Component	Total
WE & AA	44	6	50
WE & ME	69	16	85
WE & SCA	89	18	107
EE & AF	5	0	5
EE & AS	4	0	4
EE & AA	1	1	2
EE & ME	3	2	5
EE & SCA	1	0	1
ME & AF	0	0	0
ME & AS	1	0	1
ME & AA	4	2	6
ME & SCA	1	0	1
AA & AF	1	0	1
AA & AS	0	0	0
AA & SCA	16	0	16
SCA & AF	0	0	0
SCA & AS	0	0	0
AF & AS	0	0	0

Appendix A3:

Table showing within country collaboration

Country	In Giant	Not in Giant	Total

Country	In Giant	Not in Giant	Total
USA	1370	666	2036
Israel	325	44	369
Germany	227	71	298
UK	220	197	417
Spain	167	112	279
Chile	153	0	153
Italy	124	120	241
Switzerland	88	10	92
Netherland	85	34	119
Poland	48	22	70
Belgium	45	72	73
Portugal	36	20	56
Australia	32	39	71
Canada	30	64	94
South Africa	28	4	32
Ireland	15	8	23
Denmark	15	0	15
Russia	6	7	13
Turkey	5	45	50
Sweden	2	38	40

Appendix A4

Table showing collaboration between countries

Countries	In Giant	Not in Giant	Total
USA & Israel	235	11	246
USA & Switzerland	146	7	153
USA & UK	144	32	176
USA & Ireland	66	0	66
UK & Ireland	43	0	43
USA & Spain	42	3	45
Germany & Belgium	37	2	39
UK & Portugal	35	0	35
Germany & Chile	31	0	31
USA & Italy	30	6	36
USA & Germany	29	13	42
USA & Netherland	29	10	39
UK & Germany	28	8	36
UK & Netherland	27	1	28
UK & Chile	21	0	21
UK & Israel	20	6	26
UK & Switzerland	20	0	20
Germany & Denmark	19		
USA & Turkey	18	4	22
UK & Canada	17	10	27

Countries	In Giant	Not in Giant	Total
USA& Chile	14	1	15
UK & Australia	14	3	17
USA & Belgium	13	2	16
USA & Australia	13	7	20
UK & South Africa	13	1	14
UK & Turkey	11	0	11
USA & Denmark	10	1	11
USA & Sweden	10	4	14
USA & South Africa	9	0	9
USA & Canada	9	5	14
UK & Italy	9	2	11
Israel & Germany	9	2	11
USA & Portugal	8	3	11
UK & Spain	8	1	9
Israel & Netherland	8	0	8
Spain & Netherland	8	0	8
Israel & Canada	7	0	7
Germany & Poland	7	0	7
UK & Russia	6	0	6
Israel & Italy	6	8	14
Germany & Australia	6	1	7

Countries	In Giant	Not in Giant	Total
Netherland & Canada	6	1	7
USA & Poland	5	1	6
UK & Poland	5	0	5
Israel & Spain	5	5	10
Spain & Italy	5	1	6
Spain & Chile	5	0	5
Switzerland & Belgium	5	0	5
UK & Belgium	4	0	4
Israel & Australia	4	0	4
Israel & Ireland	4	0	4
Germany & Netherland	4	14	18
Germany & Ireland	4	0	4
Spain & Switzerland	4	0	4
Netherland & Poland	4	0	4
Netherland & Portugal	4	0	2
Canada & Australia	4	0	4
Switzerland & Ireland	4	0	4
Switzerland & Sweden	4	0	4
Italy & Australia	3	0	3
Netherland & Australia	3	0	3
Netherland & Ireland	3	0	3

Countries	In Giant	Not in Giant	Total
Netherland & Russia	3	0	3
Israel & Denmark	2	0	2
Germany & Portugal	2	0	2
Germany & South Africa	2	0	2
Spain & Canada	2	0	2
Spain & Belgium	2	0	2
Spain & South Africa	2	0	2
Spain & Russia	2	0	0
Italy & Netherland	2	2	4
Canada & Sweden	2	0	2
South Africa & Denmark	2	0	2
UK & Sweden	1	0	1
Israel & Turkey	1	0	1
Israel & Poland	1	0	1
Israel & Chile	1	0	1
Germany & Spain	1	0	1
Germany & Turkey	1	1	2
Germany & Switzerland	1	10	11
Spain & Ireland	1	0	1
Netherland & Turkey	1	0	1
Netherland & Switzerland	1	0	1

Countries	In Giant	Not in Giant	Total
Netherland & South Africa	1	0	1
Turkey & Poland	1	0	1
Australia & Denmark	1	0	1
Australia & Belgium	1	1	2
Belgium & Denmark	1	2	3
USA & Russia	0	1	1
UK & Denmark	0	0	0
Israel & Switzerland	0	0	0
Israel & Belgium	0	0	0
Israel & Portugal	0	0	0
Israel & South Africa	0	0	0
Israel & Sweden	0	0	0
Israel & Russia	0	0	0
Germany & Canada	0	0	0
Germany & Italy	0	0	0
Germany & Sweden	0	2	2
Germany & Russia	0	0	0
Spain & Turkey	0	0	0
Spain & Australia	0	0	0
Spain & Poland	0	0	0
Spain & Portugal	0	2	2

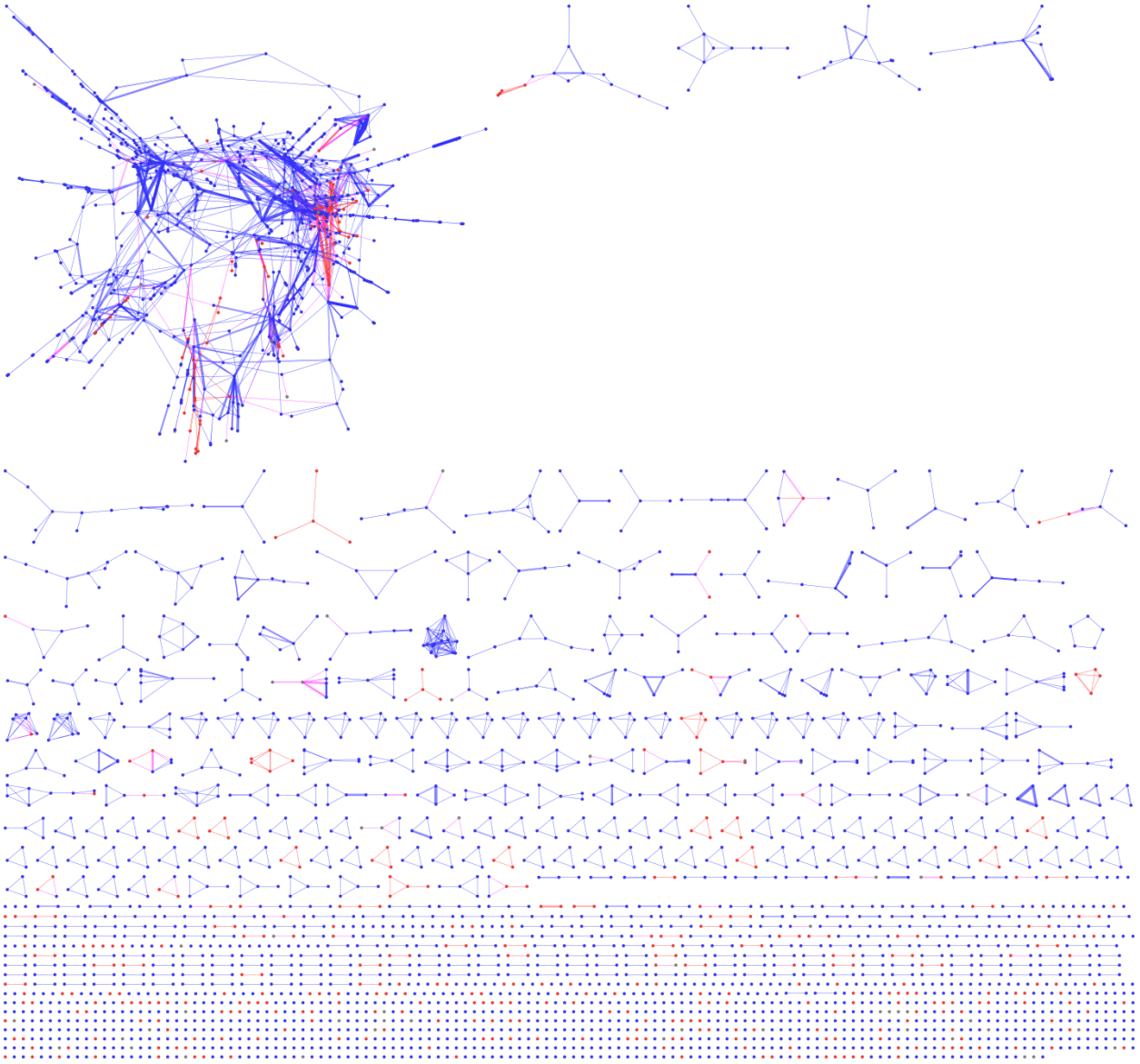
Countries	In Giant	Not in Giant	Total
Spain & Denmark	0	0	0
Spain & Sweden	0	0	0
Italy & Canada	0	0	0
Italy & Turkey	0	0	0
Netherland & Chile	0	0	0
Netherland & Belgium	0	2	2
Netherland & Denmark	0	0	0
Netherland & Sweden	0	1	1
Canada & Turkey	0	0	0
Canada & Switzerland	0	2	2
Canada & Poland	0	0	0
Canada & South Africa	0	0	0
Canada & Ireland	0	0	0
Canada & Denmark	0	0	0
Canada & Russia	0	3	3
Canada & Chile	0	0	0
Turkey & Australia	0	0	0
Turkey & Switzerland	0	0	0
Turkey & South Africa	0	0	0
Turkey & Ireland	0		0
Turkey & Denmark	0	0	0

Countries	In Giant	Not in Giant	Total
Turkey & Sweden	0	0	0
Turkey & Russia	0	0	0
Turkey & Belgium	0	0	0
Turkey & Chile	0	0	0
Australia & Switzerland	0	5	5
Australia & Poland	0	0	0
Australia & South Africa	0	0	0
Australia & Ireland	0	0	0
Australia & Sweden	0	1	1
Australia & Russia	0	0	0
Australia & Chile	0	0	0
Switzerland & Poland	0	0	0
Switzerland & South Africa	0	0	0
Switzerland & Denmark	0	0	0
Switzerland & Chile	0	0	0
Switzerland & Russia	0	0	0
Belgium & Poland	0	0	0
Belgium & South Africa	0	0	0
Belgium & Ireland	0	0	0
Belgium & Sweden	0	2	2
Belgium & Chile	0	0	0

Countries	In Giant	Not in Giant	Total
Belgium & Russia	0	0	0
Poland & South Africa	0	0	0
Poland & Ireland	0	0	0
Poland & Denmark	0	0	0
Poland & Sweden	0	0	0
Poland & Chile	0	0	0
Poland & Russia	0	0	0
South Africa & Ireland	0	0	0
South Africa & Sweden	0	0	0
South Africa & Chile	0	0	0
South Africa & Russia	0	0	0
Ireland & Denmark	0	0	0
Ireland & Sweden	0	2	2
Ireland & Chile	0	0	0
Ireland & Russia	0	0	0
Denmark & Sweden	0	0	0
Denmark & Chile	0	0	0
Denmark & Russia	0	0	0
Sweden & Chile	0	0	0
Sweden & Russia	0	0	0
Chile & Russia	0	0	0

Appendix B:

WEIRD and non-WEIRD category all sample



Appendix C:

UKZN Ethical Clearance

12 May 2014

Mr Brian Mhlongo 209521645
School of Applied Human Sciences
Pietermaritzburg Campus

Dear Mr Mhlongo

Protocol reference number: HSS/0361/014M
Project title: Mapping "internationalization" in research collaboration in the International Society for Political Psychology (ISPP)

Full Approval-No-Risk

In response to your application dated 10 April 2014, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number. Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....

Dr Shenuka Singh (Chair)
Huaminties & Social Sciences Research Ethics Committee